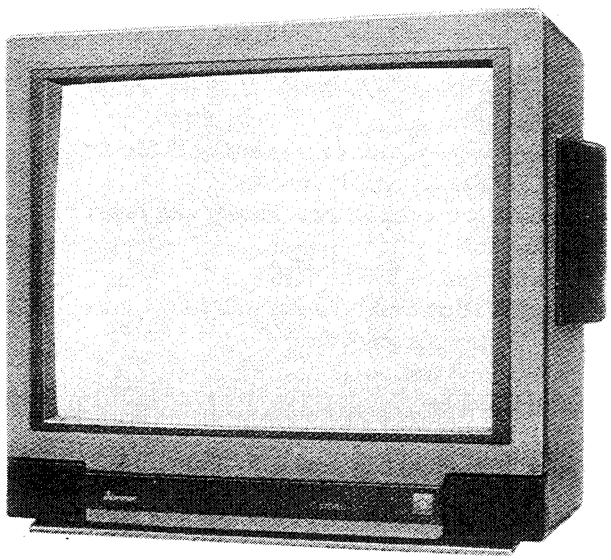
JANUARY 1989

MITSUBISHI

Service Manual
Handbuch



MODEL
MODELL

CT-2531EST
CT-2531EST(Y)

MITSUBISHI ELECTRIC EUROPE GMBH

ENGLISH

SPECIFICATIONS

Reception System CCIR-B & G
Colour System PAL, SECAM
Channels

	<CT-2531EST>	<CT-2531EST(Y)>
VHF	2~4, X~Z 5~12, S1~S41	A~H H1~H2, S1~S20
UHF	21~69	21~69

Mains Input AC220V 50Hz
Power Consumption 113W
Aerial Input 75Ω
Intermediate Frequency Video 38.9MHz
Sound 33.4MHz, 33.16MHz
Colour 34.47MHz
Intercarrier Frequency 5.5MHz/5.84MHz
Audio Output 5W+5W
Speaker 2-25/32"(7cm)×1-9/16"(4cm) Oval type 2 pcs
4"(10cm) Round type 2 pcs
Chassis EURO 4Z
Picture Tube A59EAK01X01 25" 110° Deflection
Semiconductors

	<CT-2531EST>	<CT-2531EST(Y)>
Integrated Circuit....	27	27
Transistors.....	62	62
Diodes	100	100
Positive Thermistor.....	1	1

Cabinet Dimensions 23-15/32"(W)×21-5/16"(H)×18-7/8"(D)
596mm 541mm 480mm
Weight 31.5kg (69.4 lbs)
Special Features

- 30 Programme Selection and Channel Position Number, or Name Display System
- Push Button Voltage Synthesizer Tuning System with Automatic Fine Tuning Function
- TV/VTR Common use Remote Control Hand Unit
- Infrared 30 Programme Direct Access and 61 Functions Remote Control System
- 90/60/30 minutes Selectable OFF TIMER
- On-Screen Indications as follows:
  Programme Name
  AV, Optimum, Colour, Picture, B-LEVEL, Bass, Treble, Balance, wide, Off-Timer (Remaining Time), Volume, Sound Mute — With Tuning Switch OFF
  Channel Position Number, Programme Name, (Presetable), AFT, Rough Tuning Indication — With Tuning Switch ON
- Last Programme, Volume and Power On/Off Memory
- A Red LED Standby and On Indicator
- AV Input/Output and RGB Input Facility with Peri-TV Connector
- Y/C, Audio Input for S-VHS VTR.
- SECAM/PAL Dual Colour System with CTI (Colour Transient Improvement)
- Spatial Stereo Sound
- Teletext Reception
- CATV Programme Reception
- 5W+5W Stereo Sound System

SAFETY PRECAUTIONS

NOTICE: Observe all cautions and safety related notes located inside the receiver cabinet and on the receiver chassis.

WARNING

1. Operation of these receivers outside the cabinet or with the cover removed, involves a shock hazard from the receiver power supplies. Work on the receiver should not be attempted by anyone who is not throughly familiar with precautions necessary when working on high voltage equipment.
2. Do not install, remove or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept away while the picture tube is being handled. Keep the picture tube away from the body while handling.
3. When service is required, observe the original lead dressing. Extra precaution should be given to assure correct lead dressing in the high voltage area. Where a short-circuit has occurred, replace those components that indicate evidence of overheating.

LEAKAGE CURRENT COLD CHECK

Before returning the receiver to the customer, it is recommended that the leakage current be measured according to the following methods.

With the AC plug removed from the 220V AC source, place a jumper across the two AC plug prongs. Turn the receiver AC switch on. Using an OHM-METER, connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (antennas, screwheads, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistance reading of 1 megohm. Any resistance below this value indicates an abnormality which requires corrective action.

TECHNISCHE DATEN

Empfangssystem CCIR-B/G
PAL, SECAM

Kanäl

	<CT-2531EST>	<CT-2531EST (Y)>
VHF	2~4, X~Z 5~12, S1~S41	A~H H1~H2, S1~S20
UHF	21~69	21~69

Netzeingang AC220V, 50Hz Wechselstrom
Leistungsaufnahme 113W
Antennenanschluß 75Ω
Zwischenfrequenz Video 38,9MHz
Sound 33,4MHz, 31,16MHz
Colour 34,47MHz
Ton-ZF 5,5MHz/5,84MHz
Tonteil 5W+5W
Lautsprecher 2-25/32"(7cm)×1-9/16"(4cm) Ovalet Typ 2 pcs
4"(10cm) runder Typ 2 pcs
Chassis EURO 4Z
Bildröhre A59EAK01X01 25" 110° Ablenkung
Halbleiter

	<CT-2531EST>	<CT-2531EST(Y)>
Integrierte/ Schaltungen	27	27
Transistoren	62	62
Dioden	100	100
Positive thermistor	1	1

Gehäuseabmessungen 23-15/32"(W)×21-5/16"(H)×18-7/8"(D)
596mm 541mm 480mm
Gewicht 31,5 kg (69,4 lbs)
Elektronische Merkmale

- 30 Programmspeicher mit Kanalnummern-oder Programmnamen-Anzeige.
- Synthesizer-Tuner-Abstimmung über Drucktasten, automatische Feinabstimmung.
- Fernbedienung für Fernseh und Video.
- Infrarot Fernbedienung für 30 Programme-Direktanwahl und 61 Kontrollfunktionen.
- Abschaltautomatik für 90/60/30 Minuten.
- Bildschirmanzeige für folgende Funktionen:
  Programmname, AV, Optimum, Farbe, Kontrast, Helligkeit
  Abschaltzeit mit Restlaufzeit, Lautstärke, Ton-Stumm, Tiefen, Höhen, Balance, Basisbreite, } bei ausgeschaltetem Abstimmschalter
  Kanal-Position, Kanalzahl, Programmname (wählbar), AFT, Abstimmanzeige } bei eingeschaltetem Abstimmschalter
- Memory für Letztes Programm, Lautstärke, Rote LED als Betriebsanzeige.
- Euro-AV-Anschluß.
- PAL/SECAM mit CTI (Flankenversteilerung).
- Videotext.
- Sonderkanäle.
- Stereo-Ton
- Y/C-und Audio-Eingänge für S-VHS Rekorder

SICHERHEITSHINWEISE

Achtung: Beachten Sie alle Sicherheitshinweise, die im Gehäuse und auf dem Gerät— und Gerätechassis angebracht sind.

Warnung

1. Die Inbetriebnahme dieses Gerätes mit abgenommener Rückwand oder herausgenommenem Chassis ist wegen der Gefahr von gesundheitsgefährdenden elektrischen Schlägen ausschließlich, im Umgang mit elektrischer Hochspannung, vertrautem und ausgebildetem Fachpersonal vorbehalten.
2. Der Ein/Ausbau der Bildröhre, sowie der Umgang mit der Bildröhre dürfen nur vorgenommen werden unter Benutzung der vorgeschriebenen Schutzkleidung und Splitterschutzbrille.
   Personen ohne diesen Schutz sollten bei Arbeiten an oder mit der Bildröhre ferngehalten werden. Bei Arbeiten an oder mit der Bildröhre ist diese möglichst weit vom körper entfernt zu halten.
3. Im Servicefalle sind die Leitungen auf ihre original Verlegung und Positionierung zu prüfen, ins Besondere die Leitungen in der Nähe des Hochspannungsteiles. Im Falle eines Kurzschlusses sind alle Bauteile zu ersetzen, die eine frühere Überhitzung erkennen lassen.

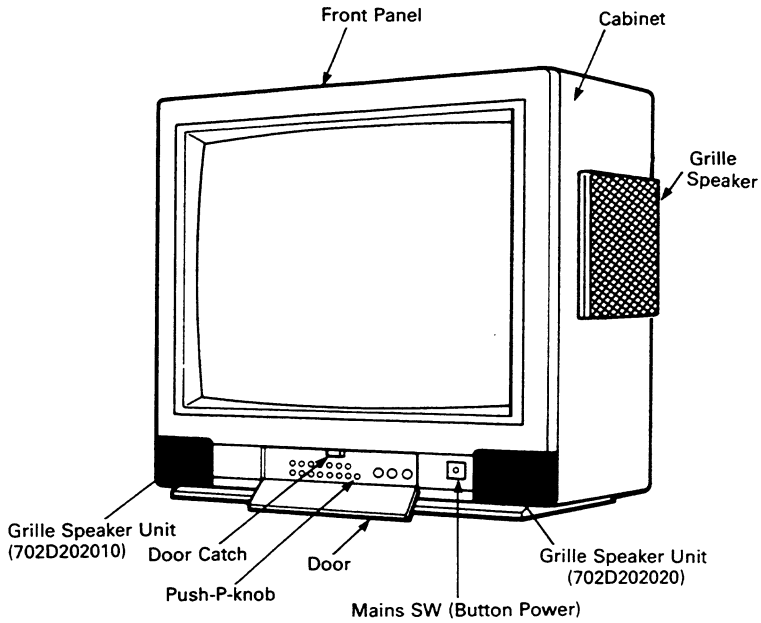
Fehlerstromprüfung, im vom Netz getrennten Zustand.

Nach jeder Reparatur sollten Fehlerströme nach folgender Methode gemessen werden.

Der Netzstecker ist von der Netzversorgung zu trennen, beide Kontakte des Netzsteckers sind mit einer Kurzschlußleitung zu verbinden. Netzschalter in Stellung "Ein-geschaltet".

Ein Ohmmeter ist mit der Kurzschlußleitung des Netzsteckers zu verbinden. Danach sind alle von außen berührbaren leitenden und Metallteile wie z.B.: Antennen und Buchsen, Griffstücke, Metallgehäuse, Schraubenköpfe, Metallblenden, Reglerachsen, auf ihren Widerstandswert zum Netzstecker hin zu untersuchen.

Sollte der festgestellte Widerstandswert Kleiner als 1 Megaohm sein, so liegt ein Fehler vor, der die Gerätesicherheit beeinträchtigt und in jedem Falle beseitigt werden muß.



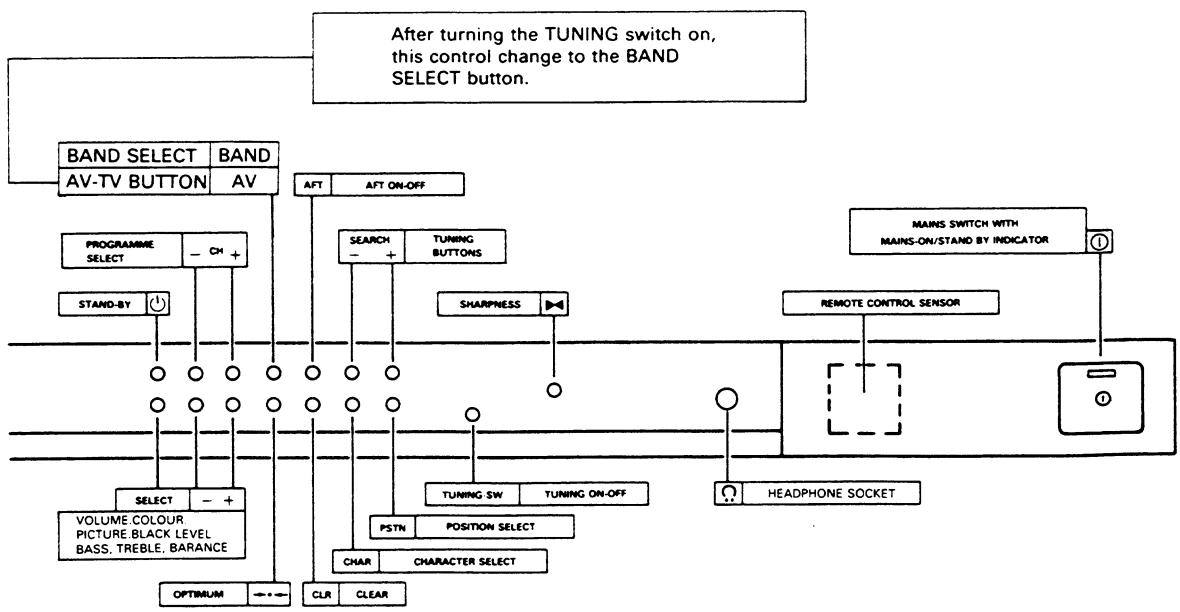
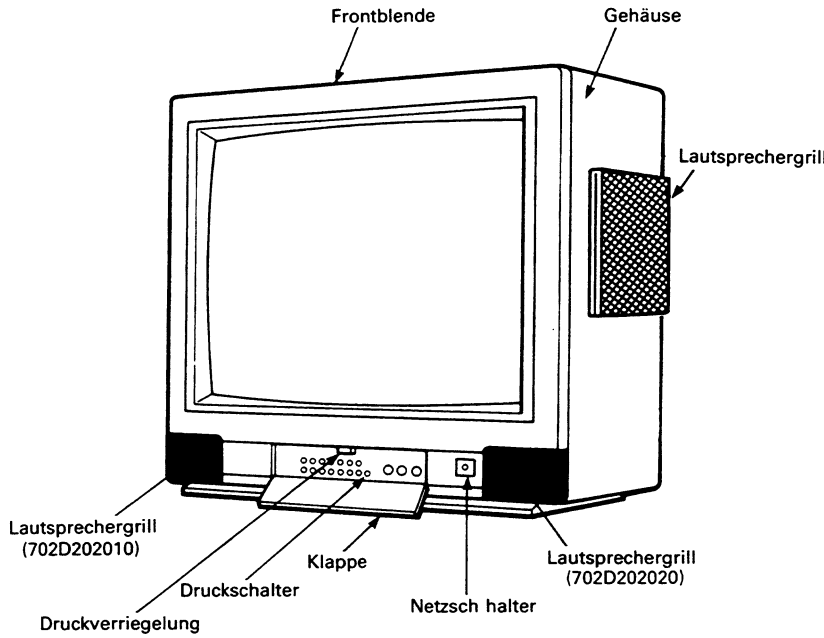


Fig. 1. Control and Cabinet Parts



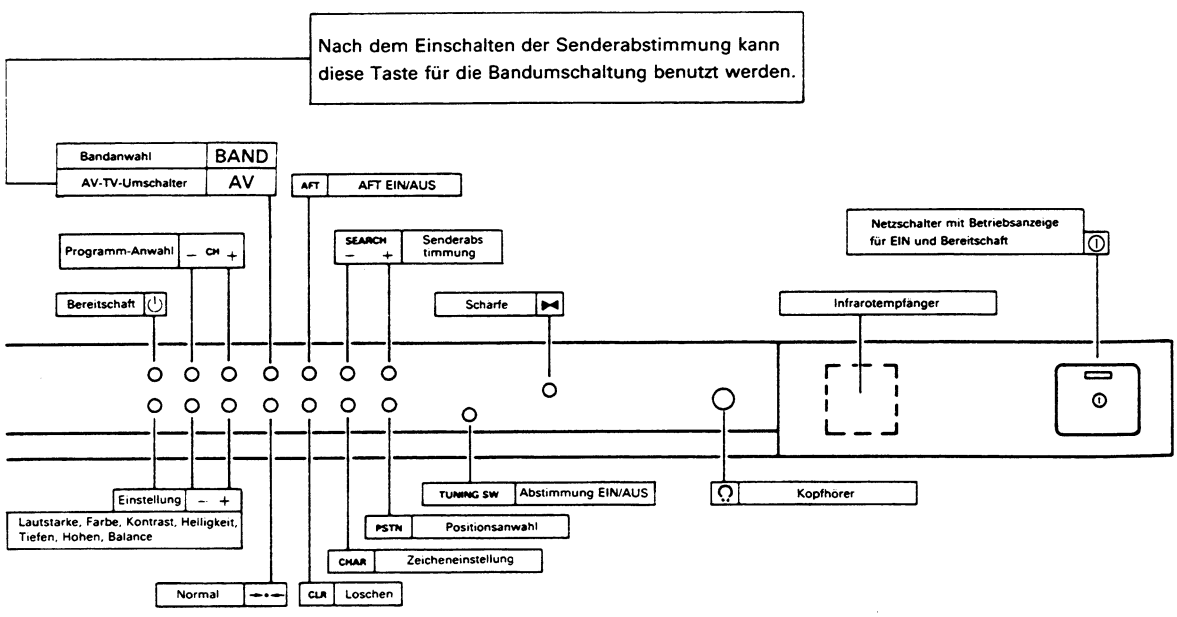
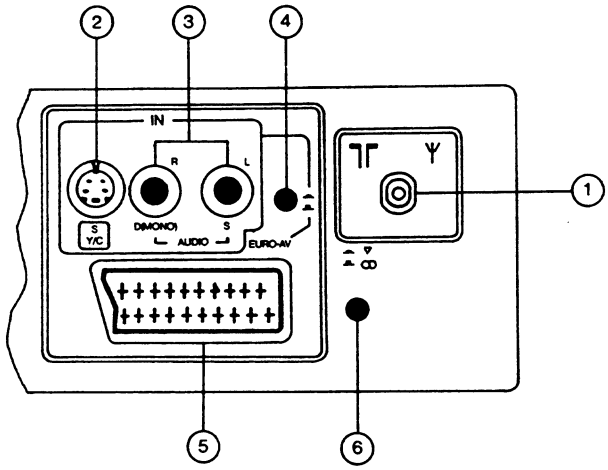


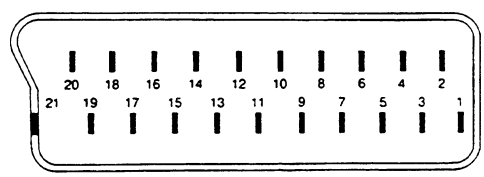
Abb. 1. Front mit Bedienungseinheit

CONNECTORS



1. AERIAL SOCKET
2. S Y/C VIDEO INPUT
3. S Y/C AUDIO INPUTS
4. AV MODE SELECT SWITCH
5. 21-PIN SCART SOCKET
6. STEREO/MONO SWITCH

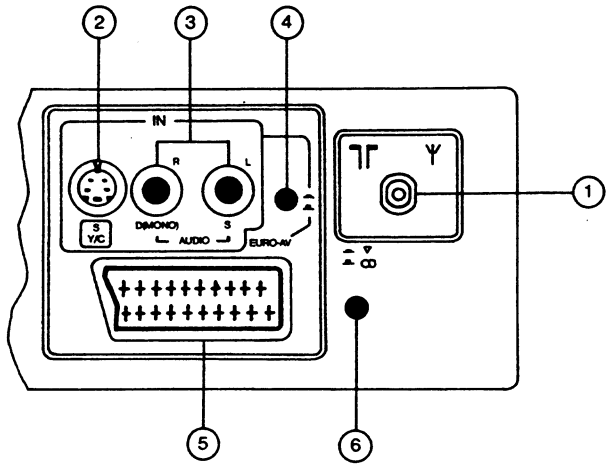
SCART SOCKET CONNECTIONS



1. AUDIO OUT R
2. AUDIO IN R
3. AUDIO OUT L
4. AUDIO EARTH
5. BLUE EARTH
6. AUDIO IN L
7. BLUE IN
8. FUNCTION SWITCH
9. GREEN EARTH
10. NOT CONNECTED
11. GREEN IN
12. NOT CONNECTED
13. RED EARTH
14. NOT CONNECTED
15. RED IN
16. RGB STATUS (BLANKING)
17. VIDEO EARTH
18. RGB STATUS EARTH
19. VIDEO OUT
20. VIDEO IN
21. SOCKET EARTH

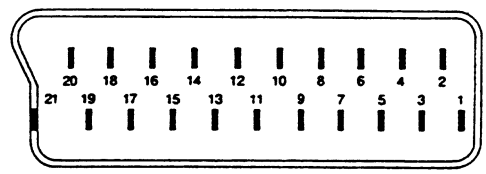
Fig. 2 Rear View

EINGÄNGE, STECKERBUCHSEN UND SCHALTER



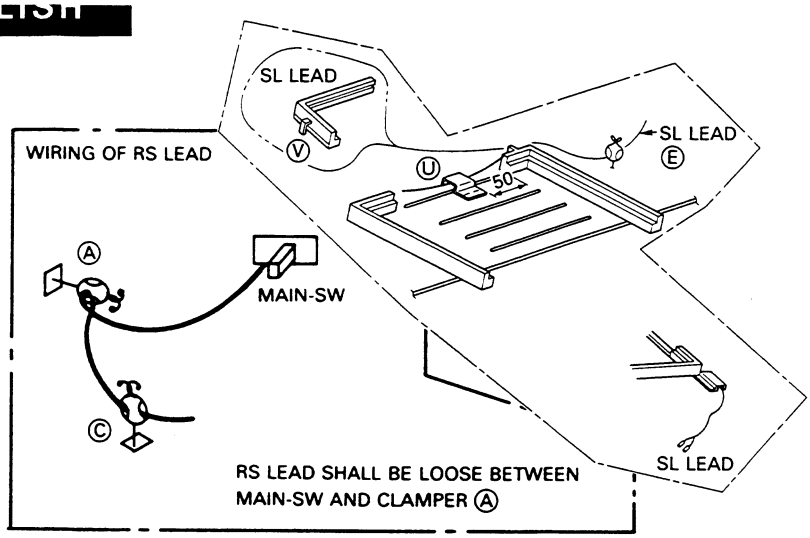
Bedeutung der Ziffern:
(1) Antenneneingang.
(2) S-Y/C-Videoeingang.
(3) S-Y/C-Audioeingänge für Stereoton.
(4) A/V-Umschalter.
(5) 21-Kontakt-Euro-Scart-Buchse.
(6) Stereo/Mono-Schalter.

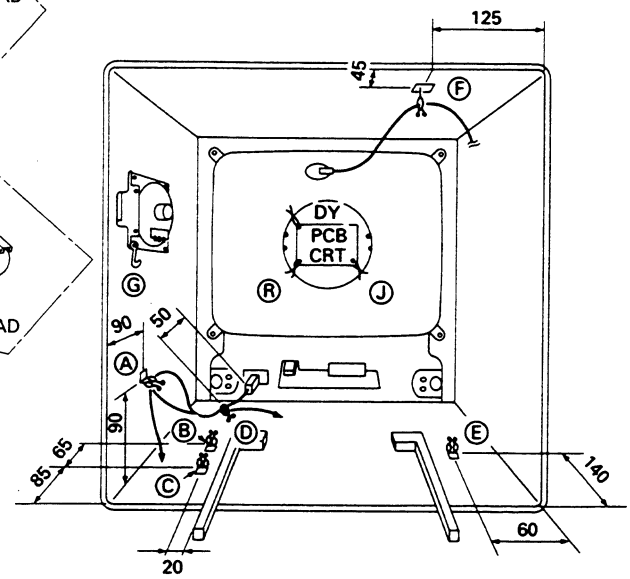
DIE BELEGUNG DER SCART—BUCHSE AM EMPFÄNGER

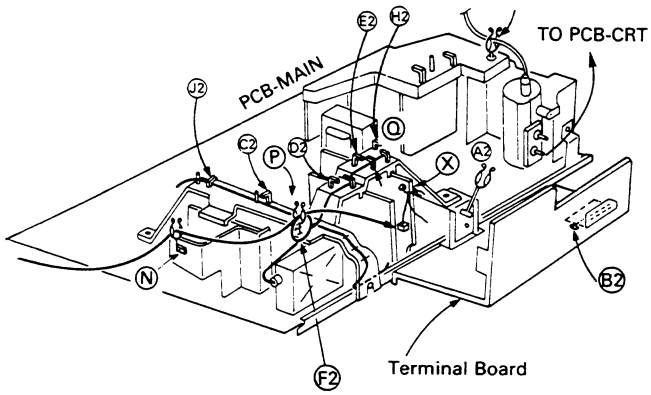


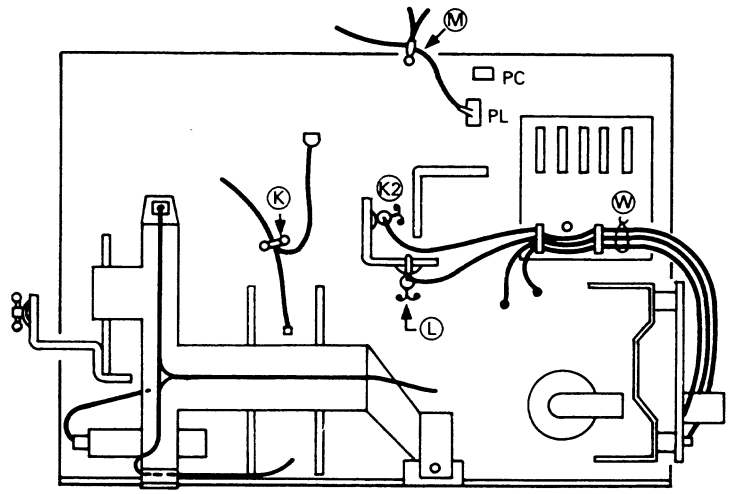
1. AUDIO AUSGANG RECHTS
2. AUDIO EINGANG RECHTS
3. AUDIO AUSGANG LINKS
4. AUDIO MASSEVERBINDUNG
5. BLAUE MASSEVERBINDUNG
6. AUDIO EINGANG LINKS
7. BLAU EINGANG
8. FUNKTIONSSCHALTER
9. GRÜN MASSEVERBINDUNG
10. NICHT BELEGT
11. GRÜN EINGANG
12. NICHT BELEGT
13. ROT MASSEVERBINDUNG
14. NICHT BELEGT
15. ROT EINGANG
16. RGB STATUS
17. VIDEO MASSEVERBINDUNG
18. RGB STAUS MASSE
19. VIDEO AUSGANG
20. VIDEO EINGANG
21. ALLGEMEINE MASSE

Abb. 2. Rückseite





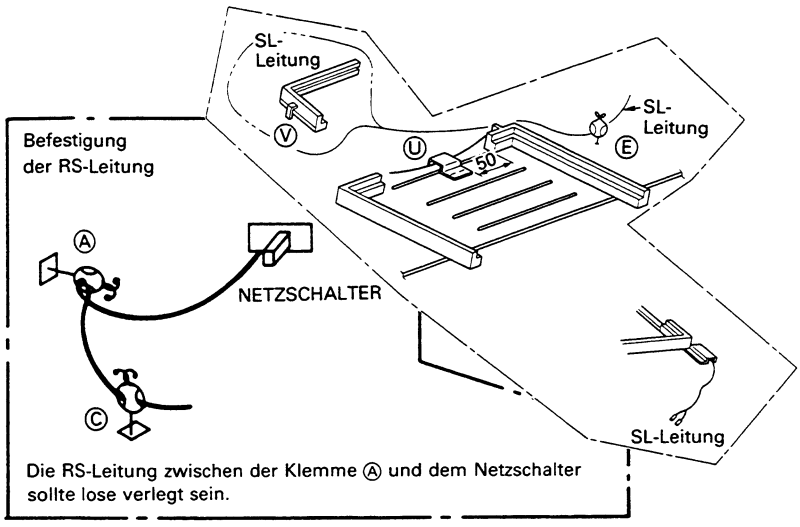


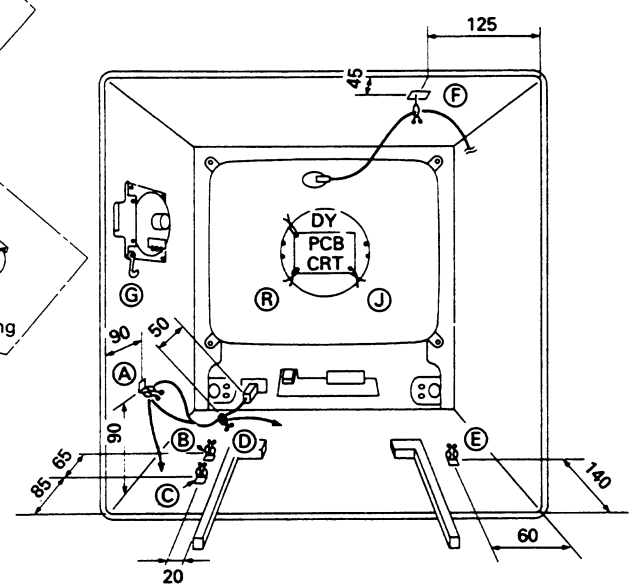


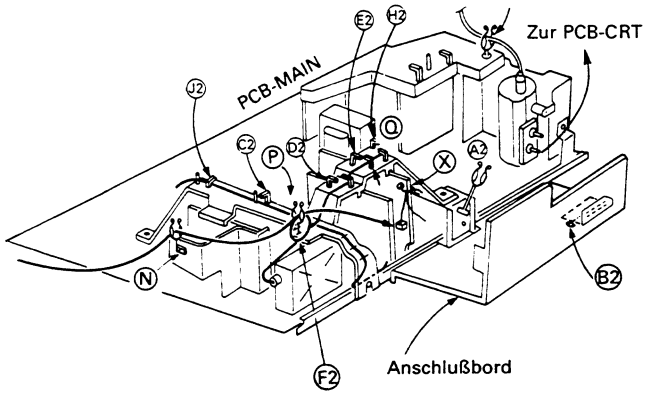
MARK	LEADS TO BE CLAMPED
A	SR, PY, PL, RS
B	[ALL LEADS FROM PCB-CONTROL]
C	RS SR [ALL LEADS FROM PCB-CONTROL]
D	PL, PL, SP391 LEAD
E	PC, SL
F	ANODE LEAD
G	SR SP391 LEAD
J	SA [2 LAYER CLAMP]
K	SH, RH, RS, SE
M	PL
N	PY
P	PY [MAKE A LOOP ON Ⓟ CLAMPER USE A LOOSISH PY LEAD]
Q	DY LEAD
R	SA [2 LAYER CLAMP]
T	SL, SP393 LEAD
U	SL
V	SL
W	DY, EB, ED, EF
X	CT, AD, MD, VD
Y	DY LEAD, SA
Z	SL, SP393 LEAD

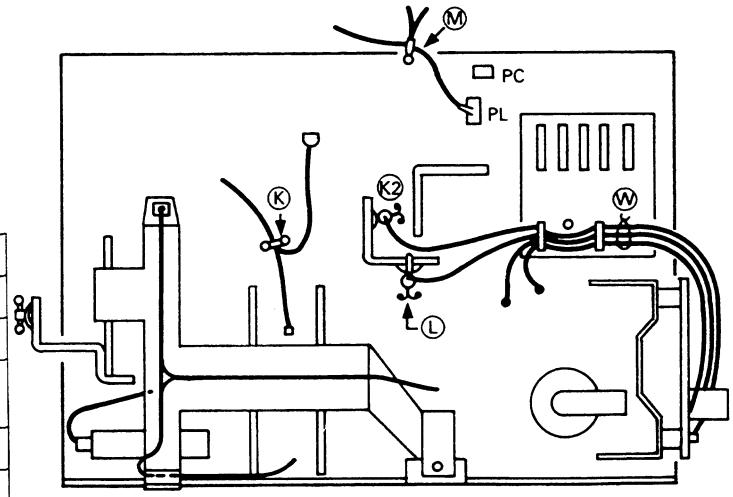
MARK	LEADS TO BE CLAMPED
A2	PS, SB, FOCUS LEAD
B2	ALL LEAD FROM PCB-PERICONNECTOR
C2	VD, AD, MD
D2	VD, AD, MD, COAXIAL CABLE
E2	VD, AD, MD, CT, COAXIAL CABLE
F2	COAXIAL CABLE
H2	COAXIAL CABLE
J2	VD, AD, MD, SP, TC
K2	EE

Fig. 2. Lead Dress









Befestigungspunkte	Zu Befestigende Kabel
A	SR, PY, PL, RS
B	[Alle Leigtungen von der PCB-CONTROL]
C	RS, SR [Alle Leigtungen von der PCB-CONTROL]
D	PL, PL, SP391-Anschluß
E	PC, SL
F	ANODEN-LEITUNG
G	SR, SP391-Anschluß
J	SA [Doppeltlage Kabelbinder]
K	SH, RH, RS, SE
M	PL
N	PY
P	PY [Eine Schlaufe an Klemme Ⓟ mit der PY-Leitung]
Q	DY LEAD
R	SA Kabelbinder
T	SL, SP393-Anschluß
U	SL
V	SL
W	DY, EB, ED, EF
X	CT, AD, MD, VD
Y	DY-Anschluß, SA
Z	SL, SP393-Anschluß

Befestigungspunkte	Zu Befestigende Kabel
A2	PS, SB, FOCUS LEAD
B2	Alle leitungen von der PCB-PERICONNECTOR
C2	VD, AD, MD
D2	VD, AD, MD, COAXIAL KABEL
E2	VD, AD, MD, CT, COAXIAL KABEL
F2	COAXIAL KABEL
H2	COAXIAL KABEL
J2	VD, AD, MD, SP, TC
K2	EE

Abb. 2. Kabelführung

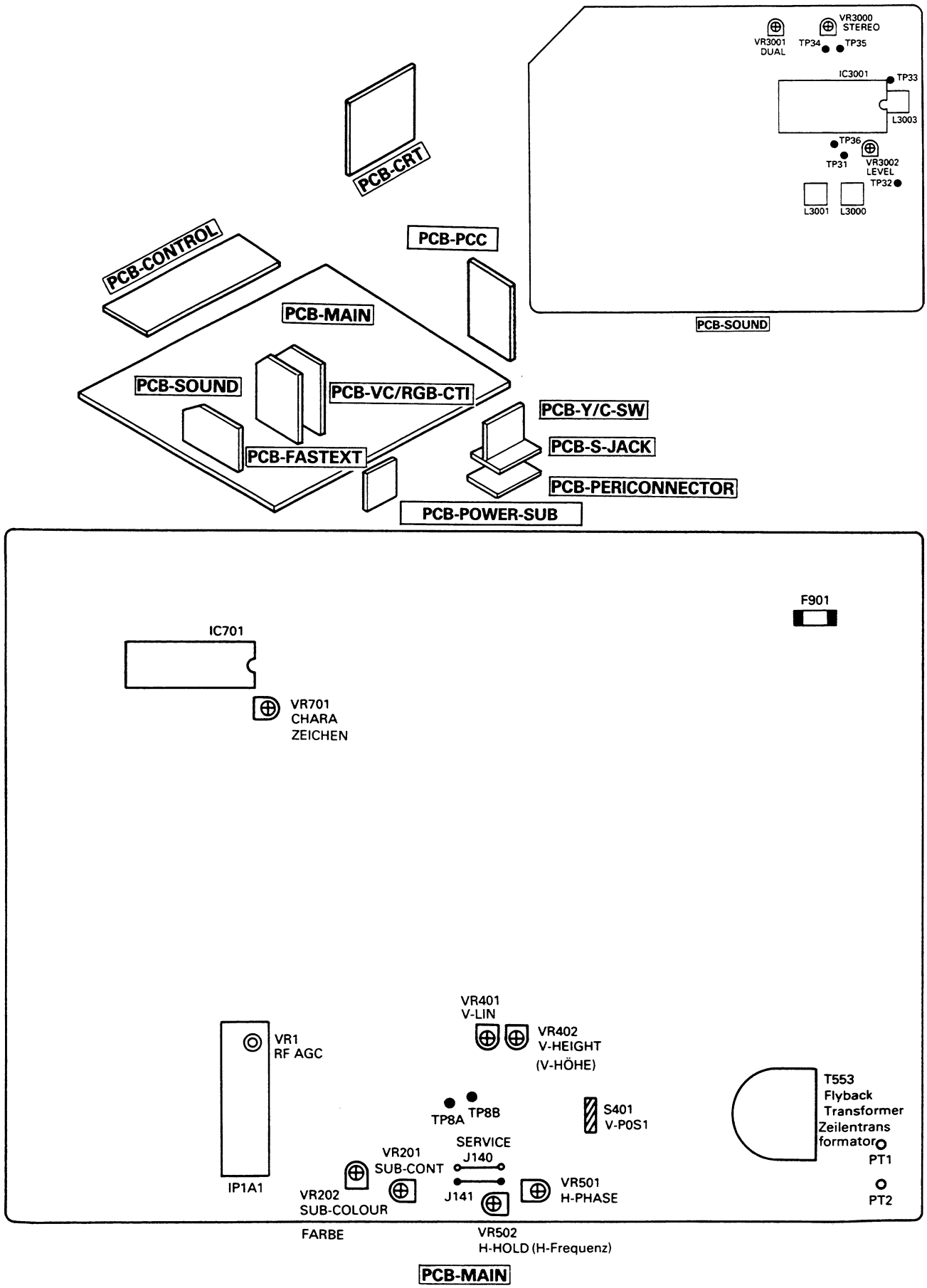
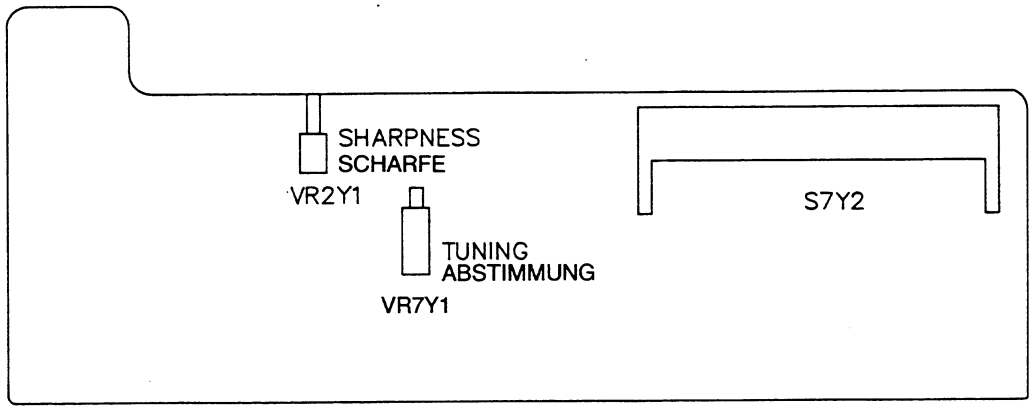
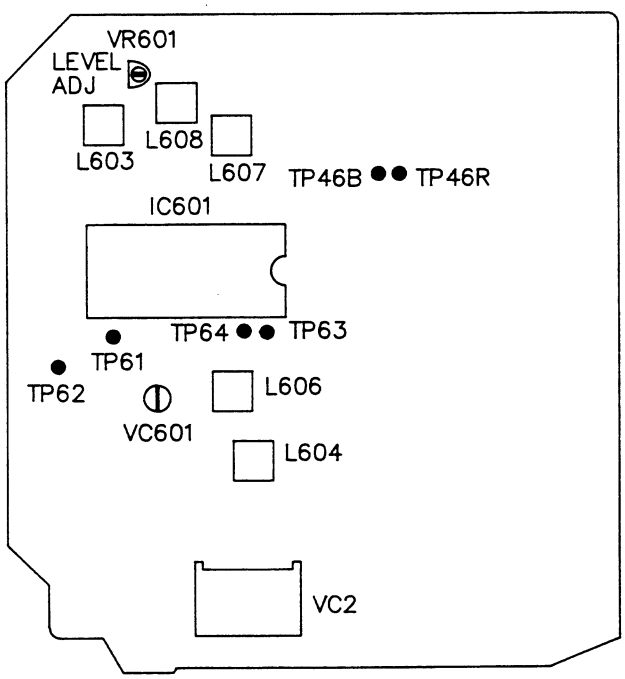


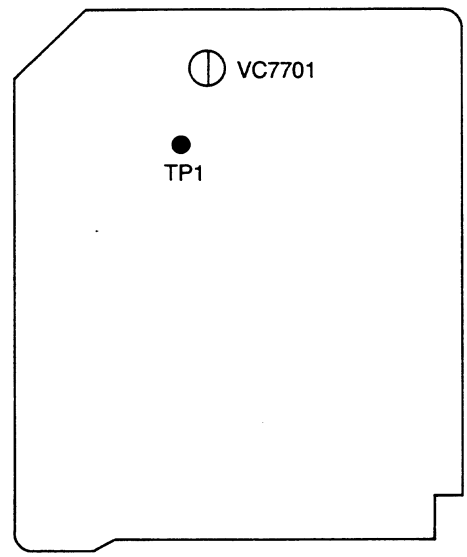
Fig. 3. Location of Controls on PCB
Abb. 3. Lageplan der Regler auf der Leiterplatte



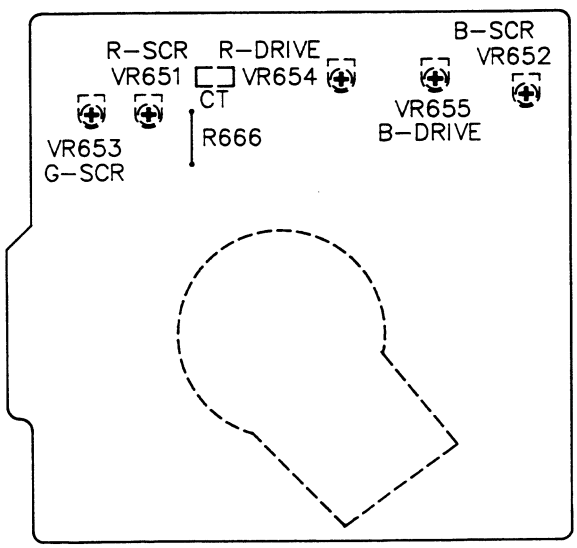
PCB–CONTROL



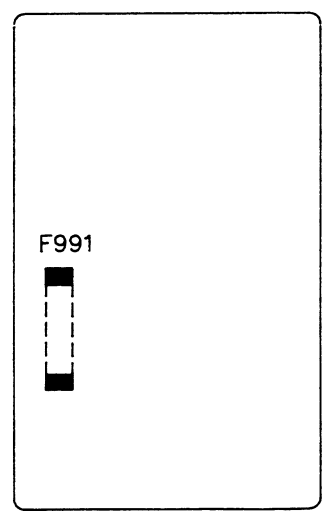
PCB–VC/RGB–CTI



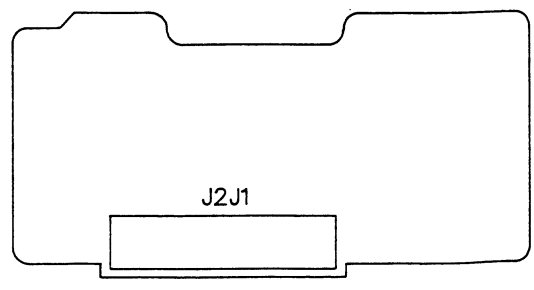
PCB-FASTEXT



PCB–CRT



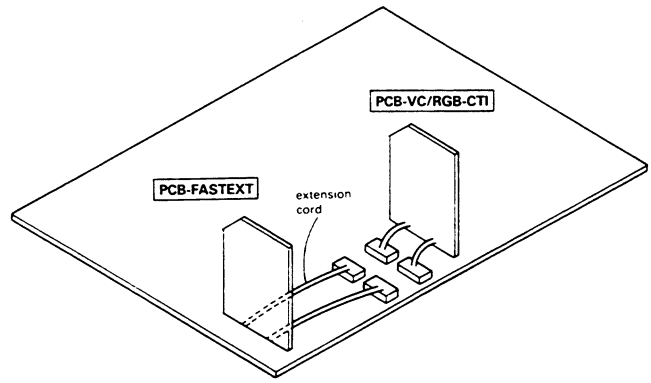
PCB–POWER–SUB



PCB–PERICONNECTOR

CHECK OF PCB-FASTEXT AND ADJUSTMENT OF PCB-VC/RGB-CTI

- Check the PCB-FASTEXT by drawing it out with the extension cord. (parts No. 859C343080)
- Adjust the PCB-VC/RGB-CTI by drawing out with the extension cord. (Parts No. 859C343080)



SERVICE ADJUSTMENTS

RF AGC (VR1)

(1) Turn AFT on.
(2) Set channel selector to a channel where crossmodulation or overload exists.
(3) Turn RF AGC control VR1 in VIF-pack slowly counterclockwise until the noise disappears.
(4) Check all channels available and make sure no noise or cross-modulation is observed.

SUB CONT (VR201)

(1) Tune receiver into G-card signal.
(2) Set SHARPNESS control at click-stop position and press "OPTIMUM" button.
Set COLOUR control to minimum position.
(3) Make sure dark and blue points does not brighten.
(4) Finely adjust CRT-BIAS (SCREEN) control on flyback transformer so that blue bar does not brighten and red bar is at normal condition.
(5) Reset G-card signal change to colour bar signal.
(6) Connect a DC ammeter with 1mA full scale between the testpoint PT1(+) and PT2(−).
(7) Adjust SUB CONT control VR201 for beam current of 650±20μA on the meter.

HEIGHT AND LINEARITY (VR402, VR401)

Make sure the AC power supply voltage is at the specified value (220V).
(1) Tune receiver into a programme.
(2) Adjust HEIGHT control VR402 for approx 90% vertical size of raster.
(3) Adjust V. LIN control VR401 for symmetry of vertical linearity.
(4) Set SHARPNESS control at click-stop position and press "OPTIMUM" button.
(5) Adjust HEIGHT control VR402 for normal vertical size.
(6) Repeat steps above, if necessary.

HORIZONTAL FREQ CONTROL (VR502)

If there is difficulty in maintaining horizontal sync, adjust VR502.
(1) Tune receiver into a programme.
(2) Short circuit the test points TP8A and TP8B.
(3) Adjust H-HOLD control VR502 for near synchronization.
(4) Remove the shorting lead from TP8A and TP8B.

HORIZONTAL CENTERING (VR501)

(1) Tune receiver into a programme.
(2) Adjust H-HOLD control VR502 as described above.
(3) Adjust H-PHASE control VR501 to centre the picture.

V-POSITION (S401)

(1) Tune receiver into a programme.
(2) Set V-POSITION switch S401 for optimum raster position.

FOCUS

(1) Tune receiver into a monochrome signal.
(2) Set SHARPNESS control at click-stop position and press "OPTIMUM" button.
(3) Adjust FOCUS control for best overall focus.

TEXT FREE RUN FREQUENCY ADJUSTMENT (6MHz)

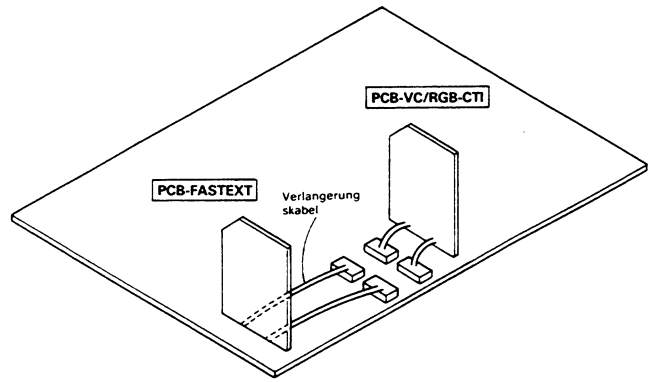
Activate the decoder over 5 minutes for stabilization.
(1) Disconnect Antenna Cable from Antenna Terminal to display a snow noise on the screen.
(2) Connect Frequency Counter to test point TP1 on PCB-FASTEXT.
(3) Adjust VC7701 for 6000.2±0.2kHz.

HORIZONTAL WIDTH AND PCC AMP (VR5P1, VR5P2)

(1) Tune receiver into crosshatch signal.
(2) Set SHARPNESS control at click-stop position and press "OPTIMUM" button.
(3) Observing both ends line on picture, adjust PCC AMP control VR5P2 for optimum EAST-WEST PCC distortion.
(4) Tune receiver into a standard monoscope signal.
(5) Adjust H-WIDTH control VR5P1 normal horizontal size.
(6) Repeat steps above, if necessary.

REPARATUR UND ABGLEICH AUF DER PCB-FASTEXT UND DER PCB-VC/RGB-CTI

- Überprüfung der PCB-Fastext ist möglich mit dem Verlängerungskabel (E-Teile No. 859C343080)
- Abgleich und Prüfen der PCB-VC/RGB-CTI mit dem Verlängerungskabel (E-Teile No. 859C343080) möglich.



ABGLEICHANWEISUNG

VERZÖGERTE REGELUNG AGC (VR1)

(1) AFC einschalten.
(2) Stellen Sie einen durch Kreuzmodulation gestörten bzw. übersteuerten Kanal ein.
(3) Drehen Sie VR1 (RF-AGC) langsam gegen den Uhrzeigersinn bis die Störungen verschwinden.
(4) Überprüfen Sie alle gut empfangbaren Sender auf rauschfreie ungestörte Bildqualität.

Kontrast-Vorregler (VR201)

(1) Stellen Sie ein Grautheppe.
(2) Den Schärfenregler in Klickposition setzen und die Normalbild-Taste drücken. Farbkontrast auf Minimum stellen.
(3) Die schwarzen und blauen Punkte dürfen nicht leuchten.
(4) Grundeinstellung, (CRT-BIAS) am zeilentrafo so einstellen, daß die blauen Punkte nicht leuchten und die roten Punkte normal leuchten.
(5) Von der Grautreppe auf das Farbbalkensignal stellen.
(6) Schließen Sie ein Amperemeter an die Punkte PT1 (+) und PT2 (−) Bereich 1mA.
(7) Stellen Sie mittels VR201 (Sub.-Cont.) ein Strom von 650±20μA ein.

BILDHÖHE UND LINEARITÄT (VR402, VR401)

Achten Sie darauf, daß die Spannungsversorgung 220V beträgt.

(1) Stellen Sie ein Testbild ein.
(2) Mit VR402 HEIGHT control ca. 90% Bildhöhe einstellen.
(3) Mit VR401 V. LIN die vertikale Linearität einstellen.
(4) Den Schärfenregler in Klickposition setzen und die Normalbild-Taste drücken. Farbkontrast auf Minimum stellen.
(5) Mittels VR402 eine optimale Bildhöhe einstellen.
(6) Wenn erforderlich Einstellung wiederholen.

HORIZONTAL FREQUENZ (VR502)

Abgleich mit VR501 bei schlechter Horizontalsynchronisation.

(1) Stellen Sie ein Testbild ein.
(2) Die Testpunkte TP 8A und TP 8B kurzschließen.
(3) Mit VR502, H-Hold die horizontale Syncronisation in Schwebung bringen.
(4) Kurzschluß von TP8A und TP8B entfernen.

HORIZONTAL-PHASE (VR501)

(1) Stellen sie ein Testblid ein.
(2) Überprüfen Sie die Horizontal-Frequenz (VR502).
(3) Mit VR501, H-Phase das Bild centrieren.

V-POSITION (S401)

(1) Normales Programm einstellen.
(2) Mit S401, V-Position, optimale vertikale Position einstellen.

FOKUS

(1) Stellen Sie ein schwarz/weiß Bild ein.
(2) Den Schärfenregler in Klickposition setzen und die Normalbild-Taste drücken. Farbkontrast auf Minimum stellen.
(3) Mittels des Fokusreglers (Zeilentransformator) optimale Gesamtbildschärfe einstellen.

TEXT-Freilauffrequenz-Einstellung (6MHz)

Vor der Einstellung sollte der Decoder wenigstens 5 Minuten warmlaufen.

(1) Nur auf Rauschen stellen. Leerkanal oder Antennenkabel ziehen.
(2) An TP-1 auf dem PCB-FASTEXT einen Frequenzzähler anschließen.
(3) Mit VC7701 eine Frequenz von 6000, 2±0,2 KHz einstellen.

BILDBREITE UND OST-WEST (VR5P1, VR5P2)

(1) Gitter-Testbild einstellen.
(2) Schärfenregler in Klickposition und "OPTIMUM" Taste drücken.
(3) Den PCC-AMP mit VR5P2 auf optimale OST-WEST-Korrekfur einstellen.
(4) Normal Testbild einstellen.
(5) Mit VR5P1 auf normale Bidbreite einstellen.
(6) Wenn erforderlich Abgleich wiederholen.

DISPLAY POSITION (VR701)

This adjustment shall be conducted after the H-PHASE control VR501 adjustment have been completed.

(1) Tune receiver to a G-Card signal.
(2) Press "OPTIMUM" button and adjust DISPLAY POSITION control VR701 so that the optimum display shall be in the middle of the horizontal width of the picture. (Fig. 4).

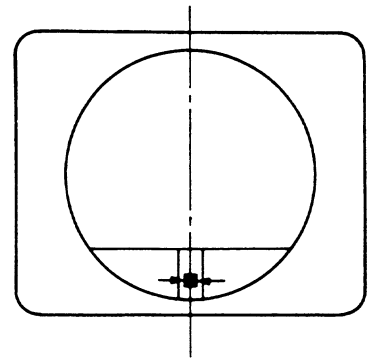


Fig. 4. DISPLAY POSITION

CHROMA CIRCUITS

PAL CIRCUIT

FREE RUN FREQUENCY (VC601)

(1) Tune receiver into PAL colour bar signal.
(2) Connect TP63 and Vcc via the resistor 10kΩ.
(3) Connect TP61 and TP62.
(4) Adjust free run frequency control VC601 for almost colour synchronization.
(5) Remove the shorting-lead and the resistor.

VECTOR

(1) Tune receiver into G-card signal.
(2) Turn AFT on and confirm the AFT operation.
(3) Press "OPTIMUM" button.
(4) Set the oscilloscope to the X-Y mode and connect TP46B to the horizontal axis(X) and TP46R to the vertical axis(Y).
(5) Adjust TRANS DL OUT control L603 so that outword double dots draw together.
(6) Adjust LEVEL-ADJ control VR601 so that two points on the Xaxis shall be merged. (refer to Fig. 5)

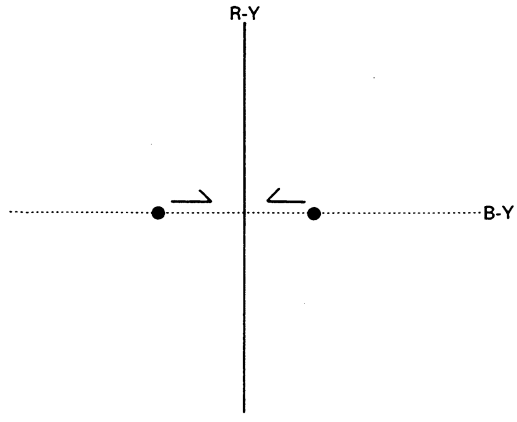


Fig. 5. Vector Pattern of G-card Signal

COLOUR OUTPUT (VR202)

This adjustment shall be conducted after the VECTOR, Grey Scale and SUB-CONT adjustments have been completed.

(1) Tune receiver to PAL colour bar signal.
(2) Connect the oscilloscope to pin ③ of the connector CT .
(3) Set SHARPNESS control at click stop position and press "OPTIMUM" button.
(4) Adjust SUB-COLOUR control VR202 so that the tops of the waveforms shall be flat as shown in Fig. 6.

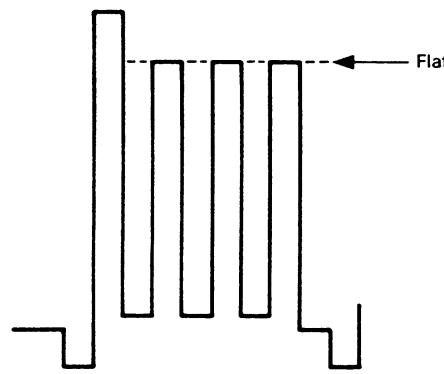


Fig. 6. Wave form of colour output

Positionseinstellung des Anzeige (VR701)

Überprüfen Sie die Einstellung horizontale Phase (VR501) bevor Sie diesen Abgleich durchführen.

(1) Stellen Sie ein Testbild mit Gitter muster ein.
(2) "Normal" Taste drücken und mit VR701 die Anzeige in die horizontale Mitte des Bildes bringen..

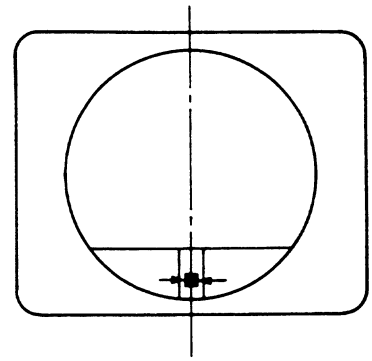


Abb. 4. ANZEIGE POSITION

FARBKREIS

FREILAUFABGLEICH DER REFERENZFREQUENZ (VC601)

(1) Stellen Sie das Gerät auf ein Pal Farbbalkensignal ein.
(2) TP63 über einen 10k Widerstand mit +Vcc verbinden.
(3) TP61 und TP62 kurzschließen.
(4) Freilauf der Referenzfrequenzkontrolle VC601 auf der Hauptplatine auf Farbsynchronisation einstellen.
(5) Kurzschluß und Widerstand entfernen.

VEKTOR ABGLEICH

(1) Stellen sie ein Testbild mit Gitter muster ein.
(2) AFT einschalten und sicherstellen, daß die AFT arbeitet.
(3) "Normal" Taste drücken.
(4) Ein Oszilliskop in den X-Y Betrieb bringen und TP46B mit dem horizontalen Eingang(X), und TP46R mit dem vertikalen Eingang(Y) verbinden.
(5) L603, TRANS DL Ausgang so einstellen, daß die außenliegenden Doppelpunkte übereinander geschrieben werden.
(6) VR601, LEVEL-ADJ so einstellen, daß die Punkte auf der X-Achse zusammenlaufen. (siehe Abb. 5).

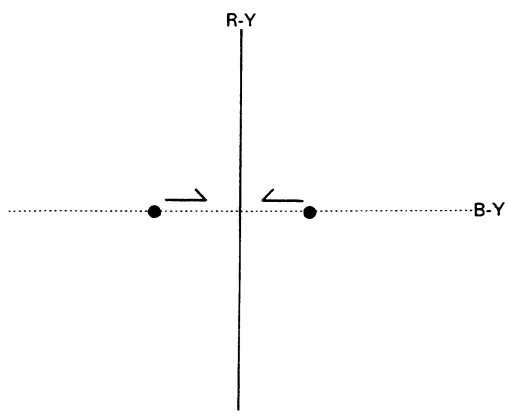


Abb. 5. Vektorgramm des Testbildes

FARBAUSGANG (VR202)

Vor dieser Einstellung sollte der Grauabgleich, Vektoreinstellung und SUB-CONT durchgeführt werden.

(1) Farbbalkensignal einstellen.
(2) Oszilloskop am Pin 3 vom Stecker CT anschließen.
(3) Schärfenregler in Klickposition bringen und Normaltaste drücken.
(4) Den Vorregler für Farbe, SUB-COLOUR VR202 so einstellen, daß die Oberseite der Signalamplitude flach ist. (siehe Abb. 6).

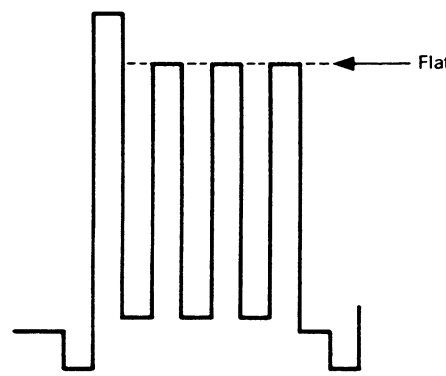


Abb. 6. Signalform um Farbausgang

SECAM CIRCUIT

When adjust the SECAM circuits, tune receiver into SECAM colour bar signal.

SECAM BELL FILTER (L604)

(1) Connect TP64 and Vcc via the resistor 10kΩ.
(2) Connect the oscilloscope to pin ⑮ of IC601.
(3) Adjust L604 so that the widths of the adjoining colour bar signals of the horizontal sync, signal shall be nearly equal.
(4) Remove the resistor.

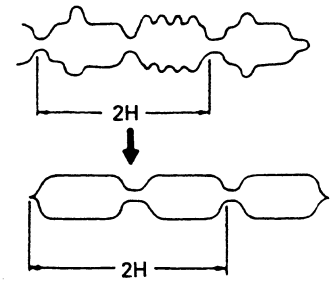


Fig. 7

SECAM IDENTIFICATION (L606)

(1) Connect pin ㉑ of IC601 to Vcc via the resistor 10MΩ.
(2) Connect the oscilloscope to pin ㉑ of IC601.
(3) Adjust L606 so that the DC level shall be maximum.
(4) Remove the resistor.

SECAM DEMODULATOR

(1) Set the oscilloscope to the X-Y mode and connect TP46B to the horizontal axis(X) and TR46R to the vertical axis(Y).
(2) Adjust L607 and L608 so that the middle bright point corresponding to the white of vector and the bright point corresponding to the black shall be merged. (refer to Fig. 8).

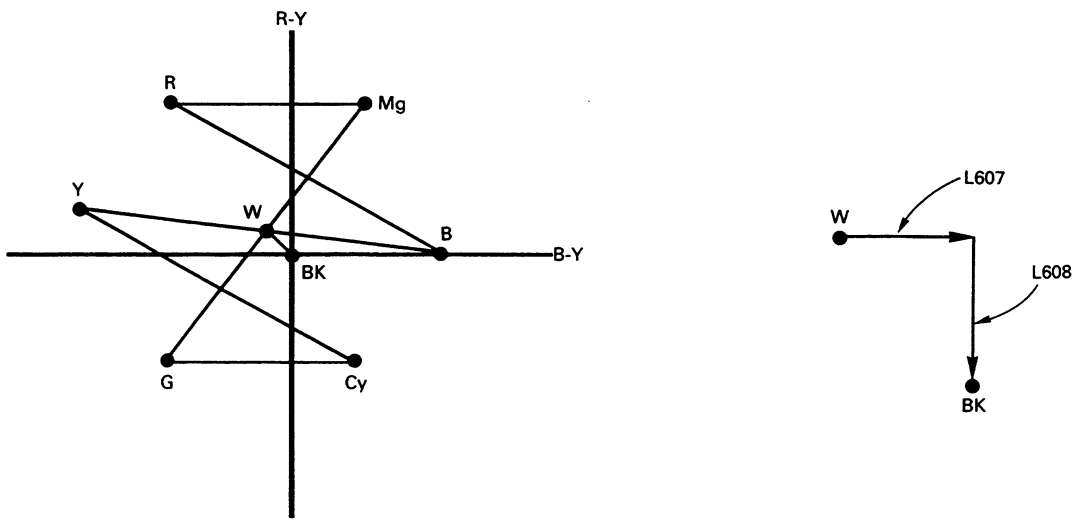


Fig. 8. SECAM Demodulator pattern of SECAM colour bar signal.

SECAM SIGNALKREIS

Für die Signaleinstellung im Secamkreis ein Secamsignal empfangen.

SECAM GLOCKENFILTER (L604)

(1) Den TP64 über einen 10K Widerstand mit +VCC verbinden.
(2) Ein Oszilloskop am Pin ⑮ vom IC601 anschließen.
(3) Die Spule L604 so einstellen, daß die Weite der angrenzenden Farbsignalbalken mit den horizontalen Syncronsignal gleich sind.
(4) Kurzschlußwiderstand entfernen.

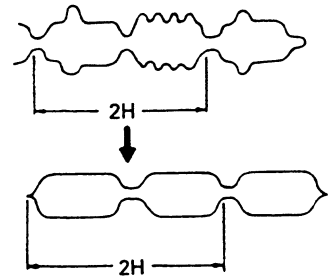


Abb. 7.

SECAM IDENTIFICATION (L606)

(1) Pin ㉑ vom IC601 über einen 10M Widerstand mit der +VCC verbinden.
(2) Ein Oszilloskop mit der Prüfspitze am Pin 21 von IC601.
(3) L606 so einstellen, daß der Gleichspannungsanteil Maximum hat.
(4) Kurzschlußwiderstand entfernen.

DEMODULATOR-VEKTOR FÜR DES SECAM

(1) Ein Oszilloskop in die X-Y Betriebsart bringen und den X-Eingang an TP46B und den Y-Eingang an TP46R anschließen.
(2) L607 und L608 so einstellen, daß der mittlere helle Punkt mit dem "W" Vektorpunkt und der helle Punkt mit dem "BK" Vektorpunkt korrespondiert.

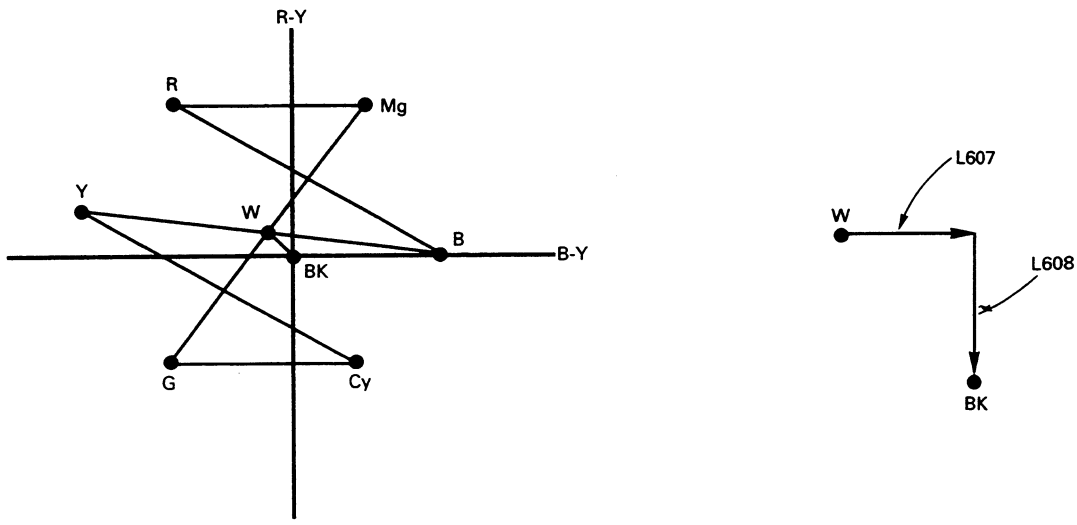


Abb. 8. DEMODULATOR-VEKTOR für des Secam Farbsignal

• DUAL SOUND CIRCUIT

SOUND DETECTION COIL

Apply a RF signal of dual sound mode specified in Table 1. The video signal shall basically be a colour bar signal. The channel is not specifically designed.

(1) Allow the receiver (having a dual sound circuit) to warm up for at least three minutes before starting the adjustment.

Table 1

Amplitude Modulation Ratio of Pilot Signal	50%
Main channel	1KHz, FM 100% modulation (with 30KHz deviation)
Sub-channel	400Hz, FM 100% modulation (with 30KHz deviation)
Input signal strength	70dBμ (75Ω terminated)

(2) Turn detector balance control VR3002 fully anticlockwise. (for maximum main channel sound detection output)

(3) Connect an oscilloscope to TP31 and adjust L3001 for maximum amplitude of the 1KHz main channel sound detection output on the scope. Make sure that the waveform is not distorted.

(4) Connect an oscilloscope to TP32 and adjust the sub-channel sound detection coil L3000 for maximum amplitude of the 400Hz sub-channel sound detection output on the scope. Make sure that the waveform is not distorted.

PILOT SIGNAL DETECTION COIL

Supply the dual sound RF signal. Connect an oscilloscope (using 10:1 probe) to TP33 and adjust the pilot signal detection coil L3003 so that the amplitude A shown in Fig. 9 is maximum with minimum noise on the envelope of the pilot signal.

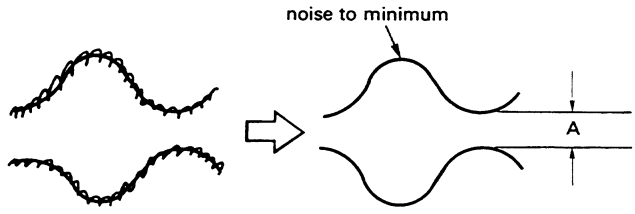


Fig. 9.

BPF TUNING FREQUENCY

Supply the dual sound RF signal.

(1) Connect an oscilloscope to TP34 and adjust the dual sound BPF control VR3001 for maximum amplitude of the 274.1Hz pilot tone for the dual sound mode. Make sure that the amplitude of 274.1Hz is no less than 3.0Vp-p.

(2) Apply a stereo RF signal specified in Table 2. The video signal and channel shall be identical to the case of dual sound mode.

Table 2

Amplitude Modulation Ratio of Pilot Signal	50%
Left channel sound	1KHz, FM 100% modulation (with 30% deviation)
Right channel sound	400Hz, FM 100% modulation (with 30% deviation)
Input signal strength	70dBμ (75Ω terminated)

(3) Connect an oscilloscope to TP35 and adjust the stereo BPF control VR3000 for maximum amplitude of the 117.5KHz pilot tone for stereo mode. Make sure that the amplitude of the 117.5KHz is no less than 3.0Vp-p.

DETECTION OUTPUT BALANCE

(1) Cancel the modulation of the left channel sound specified in Table 2.

(2) Connect an oscilloscope to TP36 and adjust VR3002 for minimum amplitude of the 400Hz output signal. (This adjustment may determine the crosstalk between the left and right channel sounds, therefore it should be made carefully.)

CONFIRMATION OF ADJUSTMENT

Set the signal generator again to the condition designated in Table 1 or 2 Switch quickly the mode of the signal generator to "stereo", "mono", "dual sound" and make sure each mode is correctly displayed by the mode lamp or on screen display.

• ZWEITON SIGNAL KREIS

TON-DETECTOR-ABGLEICH

Ein HF-Signal mit folgenden Bedingungen anlegen und empfangen.

Zweiton-Signal: Wie in der Tabelle 1 angegeben

Video-Signal: Normales Farbbalkensignal

(1) Das Gerät sollte im Zweitonbetrieb mindestens drei Minuten vor dem Abgleich warmlaufen.

Tabelle 1

AM Anteil des Pilottones	50%
Hauptkanal	1KHz, FM 100% modulation (mit 30KHz deviation)
Nebenkanal	400Hz, FM 100% modulation (mit 30KHz deviation)
Eingangssignal	70dBμV (75Ω abgeschlossen)

(2) Den Regler VR3002 detector balance auf Linksanschlage stellen, um für den Hauptkanal maximalen Ausgang zu bekommen.

(3) Ein Oszilloskop am TP31 anschließen, und mit L3001 bei 1KHz maximale Amplitude ohne Verzerrung einstellen.

(4) Ein Oszilloskop an TP32 anschließen und mit L3000 den zweiten Kanal bei einer Frequenz von 400 Hz auf Maximum einstellen. Das Signal darf nicht verzerrt sein.

PILOT-DETECTOR-KREIS-ABGLEICH

Ein Zweiton HF-Signal einspeisen.

Ein Oszilloskop mit Prüfspitze 10:1 an TP33 anschließen und mit L3003 die Amplitude des Signals im Bereich A (siehe Abb. 9) auf Maximum einstellen. Das Signal sollte ein Minimum an Rauschanteilen haben.

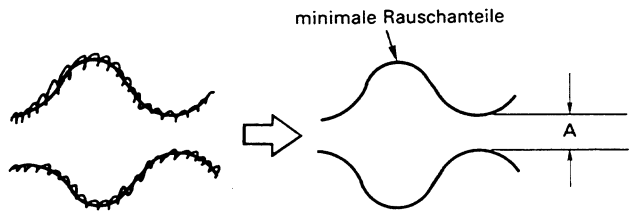


Abb. 9.

BPF TUNING-FREQUENZ

Ein Zweiton HF-Signal einspeisen

(1) Ein Oszilloskop an TP34 anschließen und den Kontrollregler für das Zweiton BPF VR3001 so einstellen, Daß die Signalamplitude des Signaltones 274, 1Hz Maximum hat. Die Signalamplitude darf nicht weniger als 3 Vss betragen.

(2) Ein Stereo HF-Signal wie in Tabelle 2 anlegen. Das Videosignal und er Empfangskanal sollten wie beim Zweitonabgleich übereinstimmen.

Tabelle 2

AM Anteil des Pilottones	50%
Hauptkanal	1KHz, FM 100% Modulation (mit 30% deviation)
Nebenkanal	400Hz, FM 100% Modulation (mit 30% deviation)
Eingangssignal	70dBμV (75Ω abgeschlossen)

(3) Ein Oszilloskop an TP35 anschließen und das BPF für den Pillotton 117,5KHz mit VR3000 auf Maximum abgleichen. Die Amplitude von 117.5KHz darf nicht kleiner als 3,0 Vss sein.

DETECTOR BALANCE

(1) Die Modulation des linken Kanals wie in Tabelle 2 beschrieben, anschließen.

(2) Ein Oszilloskop am TP36 anschließen und die Amplitude mit VR3002 für 400Hz auf Minimum stellen. Da mit dieser Einstellung das übersprechen zwischen linkem und rechtem Kanal eingestellt wird, sollte dieser Abgleich sehr exakt gemacht werden.

KONTROLLE DER EINSTELLUNGEN

Den Signalgenerator wie in Tabelle 1 oder 2 einstellen und zwischen Stereo, Zweiton und Mono umschalten. Die Betriebsartumschaltung im Gerät mit der entsprechenden Anzeige muß korrekt arbeiten.

GREY SCALE

Grey scale adjustment procedure described below may be necessary when replacing picture tube or PCB-CRT.

(1) Set to the no signal condition in the AV mode.
(2) Set the following variable resistors to the specified positions.
Drive control VR654 and VR655:
Extreme counterclockwise position (on the foil side)
SUB-CONT control VR201:
Nearly in the middle position
Screen control of T553 (Flyback transformer):
Extreme counterclockwise position
(3) By-pass the R666. (short-lead)
(4) Connect the oscilloscope to Q651 and Q653 collector in turn. Connect the ground prove to the pin ② of connector [CT].
(5) Adjust SCREEN control VR651 to VR653 so that the PEDESTAL LEVEL of each collector shall be 150V.
(6) Short-circuit the service terminals J-140 and J-141. (The screen shows one horizontal line.)
(7) Adjust the SCREEN control of the T553 (Flyback Transformer) so that one of red, green, and blue begins to appear.
(8) Adjust two of VR651, VR652 and VR653 so that other two colours shall become bright.
(9) Remove the short-lead from R666 and service terminal.
(10) Change to the TV mode and tune receiver into a monochrome signal.
(11) Adjust red and blue DRIVE controls VR654 and VR655 to obtain a pure peak white raster.

GRAUABGLEICH

Der beschriebene Grauabgleich sollte gemacht werden, wenn die Bildröhre oder die Bildröhrenanschlußplatine gewechselt wurde.

(1) Gerät in AV-Betrieb setzen und kein Signal anlegen.
(2) Die folgenden Regler in die angegebene Position bringen. VR654 und VR655 gegen den Uhrzeigersinn, von der Printseite aus gesehen, auf Anschlag.
SUB-CONT VR201 in ungefähre Mittelstellung, T553 am Zeilentransformator gegen den Uhrzeigersinn stellen.
(3) R666 kurzschließen
(4) Ein Oszilloskop adwechselnd an den kollektor von Q651 und Q653 anschließen. Den Masseanschluß mit Pin 2 vom Anschluß CT verbinden.
(5) Die Regler VR651 und VR653 so einstellen, daß der PEDESTAL-LEVEL jeweils 150V beträgt.
(6) Den Serviceanschluß J-140 und J-141 kurzschließen. Keine vertikale Ablenkung.
(7) Den Regler am Zeilentransformator T553 so einstellen, daß die rote, grüne und blaue Linie gerade sichtbar ist.
(8) Mit zwei Reglern von VR651, VR652 und VR653 eine helle Linie einstellen.
(9) Kurzschluß über R666 und Service-Brücke entfernen.
(10) Gerät von AV auf HF-Empfang stellen und eine Grautreppe einstellen.
(11) Mit den Reglern für rot und blau, VR654 und VR655, ein sauberes Weiß enstellen.

PARTS LIST／TEILE LIST
CT－2531EST／CT－2531EST (Y)

In order to expedite delivery of replacement part orders.

Specify : 1.Model number／Serial number
2.Part number and Description
3.Quantity

Unless full information is supplied,delay in execution of orders will result.

⚠ : Critical components

RESISTOR / CAPACITOR

MARK	TOLERANCE	MARK	TOLERANCE	MARK	TOLERANCE
J	± 5%	J	± 5%	Z	+80% −20%
K	±10%	K	±10%	C	± 0.25pF
M	±20%	M	±20%	D	± 0.5pF
N	±30%	P	+100% − 0%	F	± 1pF
				Q	+30% −10%

Um Ersatzteilbestellungen exakt und schnell auszuführen sind folgende daten erforderlich.

Bitte Angeben : 1.Modell Typ
2.Ersatzteilnummer und Name
3.Bestellmenge

Fehlende Daten Können die Auslieferung Verzögern.

⚠ : Kritische Teile

WIDERSTÄNDE / KONDENSATOREN

MARKIERUNG	TOLERANZ	MARKIERUNG	TOLERANZ	MARKIERUNG	TOLERANZ
J	± 5%	J	± 5%	Z	+80% −20%
K	±10%	K	±10%	C	± 0.25pF
M	±20%	M	±20%	D	± 0.5pF
N	±30%	P	+100% − 0%	F	± 1pF
				Q	+30% −10%

SYMBOL NO. / SYMBOL Nr.	PART NO. / ERSATZTEIL Nr.	DESCRIPTION / BESCHREIBUNG	
TUNER AND TUBE			
⚠ V 271	255P914010	CATHOD RAY TUBE	A59EAK01X1
⚠ IP1A1	295P060010	TUNER ⟨CT-2531EST⟩	VP-5DFTZ470MHz0SC
⚠ IP1A1	295P060020	TUNER VIF PACK ⟨CT-2531EST(Y)⟩	VP-5D
INTEGRATED CIRCUITS			
IC1A1	266P192020	LA7910	
IC251	272P124010	NJM2209S	
IC2A1	272P138010	LA7952	
IC2P1	266P064010	M51320P	
IC3A1	272P139010	LA7953	
IC3A2	272P140010	LA4270	
IC3P1	266P064010	M51320P	
IC3000	272P219010	TDA2555	
IC3001	272P218010	TDA3803A	
IC401	266P405010	AN5521	
IC501	272P147010	TDA2579	⟨CT-2531EST⟩
IC501	272P147020	TDA2579A	⟨CT-2531EST(Y)⟩
IC601	272P171010	TDA4556 MSD	
IC602	272P170010	TDA4565 CTI	
IC603	272P169010	TA7676P RGB	
IC701	272P090030	M50439-563SP	
IC702	272P064010	M58630P	
IC703	266P130030	PST520E	
IC704	266P010020	μPC574J	
IC7704	272P193010	MAB8461P	
IC7705	272P096020	SAA5231	
IC7706	272P095050	SAA5243	
IC7707	263P765010	TC5565AP/APL-10	
IC7708	272P192010	PCD8572	
IC901	267P921010	STR59041	
IC902	266P934040	μPC7812H	
IC903	266P922010	μPC78M05H	
IC951	266P922010	μPC78M05H	
TRANSISTORS			
Q 201	260P544050	JA101-Q.R	
Q 202	260P543020	JC501-Q-R	
Q 252	260P543020	JC501-Q-R	
Q 253	260P298010	2SC1583-F	
Q 254	260P543020	JC501-Q-R	
Q 2A1	260P543020	JC501-Q-R	
Q 2A2	260P543020	JC501-Q-R	
Q 2A3	260P543020	JC501-Q-R	
Q 2A4	260P544050	JA101-Q.R	
Q 2J1	260P543020	JC501-Q-R	
Q 2J2	260P416030	2SC2274-F	
Q 2J3	260P543020	JC501-Q-R	
Q 2J4	260P543020	JC501-Q-R	
Q 2J5	260P543020	JC501-Q-R	
Q 2P1	260P544050	JA101-Q.R	
Q 2P2	260P543020	JC501-Q-R	
Q 2P3	260P543020	JC501-Q-R	
Q 2P4	260P543020	JC501-Q-R	
Q 3A1	260P543020	JC501-Q-R	
Q 3A2	260P416030	2SC2274-F	
Q 3A3	260P543020	JC501-Q-R	
Q 3000	260P543020	JC501-Q-R	
Q 3001	260P543020	JC501-Q-R	
Q 3002	260P543020	JC501-Q-R	
Q 3003	260P543020	JC501-Q-R	
Q 3004	260P543020	JC501-Q-R	
Q 401	260P544050	JA101-Q.R	
Q 402	260P544050	JA101-Q.R	

SYMBOL NO. / SYMBOL Nr.	PART NO. / ERSATZTEIL Nr.	DESCRIPTION / BESCHREIBUNG
Q 551	260P510020	BF419
Q 552	260P607020	2SD1878
Q 5P1	260P631010	2SD1196
Q 5P2	260P544050	JA101-Q. R
Q 5P3	260P543020	JC501-Q-R
Q 5P4	260P543020	JC501-Q-R
Q 601	260P543020	JC501-Q-R
Q 602	260P543020	JC501-Q-R
Q 651	260P425070	2SC2688-M. N
Q 652	260P425070	2SC2688-M. N
Q 653	260P425070	2SC2688-M. N
Q 654	260P544050	JA101-Q. R
Q 6P1	260P543020	JC501-Q-R
Q 6P2	260P543020	JC501-Q-R
Q 6P3	260P543020	JC501-Q-R
Q 701	260P338050	2SC2603-G
Q 702	260P543020	JC501-Q-R
Q 703	260P543020	JC501-Q-R
Q 704	260P543020	JC501-Q-R
Q 705	260P543020	JC501-Q-R
Q 706	260P544050	JA101-Q. R
Q 7A1	260P544050	JA101-Q. R
Q 7A2	260P544050	JA101-Q. R
Q 7701	260P543050	JC501-Q
Q 7702	260P543050	JC501-Q
Q 7703	260P543050	JC501-Q
Q 7705	260P543050	JC501-Q
Q 7706	260P543020	JC501-Q-R
Q 901	260P387010	2SC2236-OY
Q 902	260P387010	2SC2236-OY
Q 951	260P610010	2SC4004
Q 953	260P338050	2SC2603-G
Q 954	260P611010	2SD965-R
Q 955	260P543020	JC501-Q-R

DIODES

SYMBOL NO. / SYMBOL Nr.	PART NO. / ERSATZTEIL Nr.	DESCRIPTION / BESCHREIBUNG
D 1A0	264P370010	1N4148
D 1D0	264P370010	1N4148
D 201	264P370010	1N4148
D 202	264P370010	1N4148
D 203	264P370010	1N4148
D 251	264P460010	EQA02-05AB/RD4. 7EB2
D 252	264P370010	1N4148
D 254	264P370010	1N4148
D 255	264P501060	HZ3CLL
D 256	264P370010	1N4148
D 257	264P370010	1N4148
D 258	264P370010	1N4148
D 2A1	264P460020	EQA02-05CD/RD5. 1EB1
D 2J1	264P370010	1N4148
D 2J7	264P077010	MC301
D 2J8	264P460030	EQA02-05EF/RD5. 1EB3
D 2J9	264P458080	RD4. 3EB1
D 2R1	264P460020	EQA02-05CD/RD5. 1EB1
D 3A1	264P370010	1N4148
D 3A2	264P370010	1N4148
D 3A3	264P465080	EQA02-13A/RD13EB3
D 3000	264P370010	1N4148
D 3001	264P370010	1N4148
D 401	264P374010	1N4003G
D 403	264P370010	1N4148
D 501	264P370010	1N4148
D 502	264P370010	1N4148
D 551	264P375010	BY228
D 552	264P378020	BYW96E
D 553	264P377020	BYW95B
D 554	264P371010	BYD33G
D 555	264P374010	1N4003G
D 559	264P370010	1N4148
D 560	264P370010	1N4148
D 561	264P464080	EQA02-11C. D
D 601	264P465040	EQA02-12AB
D 603	264P465040	EQA02-12AB
D 606	264P465040	EQA02-12AB
D 610	264P370010	1N4148
D 701	264P370010	1N4148
D 702	264P370010	1N4148
D 703	264P370010	1N4148
D 709	264P370010	1N4148
D 715	264P370010	1N4148
D 716	264P370010	1N4148
D 717	264P370010	1N4148
D 719	264P370010	1N4148
D 720	264P370010	1N4148
D 721	264P464080	EQA02-11C. D
D 722	264P464080	EQA02-11C. D
D 723	264P464080	EQA02-11C. D
D 724	264P464080	EQA02-11C. D
D 725	264P370010	1N4148
D 726	264P370010	1N4148
D 727	264P370010	1N4148
D 728	264P370010	1N4148
D 729	264P370010	1N4148
D 730	264P501050	HZ3BLL
D 731	264P370010	1N4148
D 732	264P370010	1N4148
D 733	264P370010	1N4148
D 734	264P370010	1N4148
D 735	264P370010	1N4148
D 7A1	264P370010	1N4148
D 7A2	264P370010	1N4148
D 7Y1	264P513010	LIGHT EMITTING SLB-72URHL
D 7Y2	264P370010	1N4148
D 7Y3	264P370010	1N4148

SYMBOL NO. / SYMBOL Nr.	PART NO. / ERSATZTEIL Nr.	DESCRIPTION / BESCHREIBUNG
D 7Y4	264P370010	1N4148
D 7Y5	264P370010	1N4148
D 7Y6	264P370010	1N4148
D 7Y7	264P370010	1N4148
D 7701	264P370010	1N4148
D 7702	264P370010	1N4148
D 7703	264P370010	1N4148
D 7705	264P370010	1N4148
D 7706	264P370010	1N4148
D 7707	264P460020	EQA02-05CD/RD5.1EB1
D 7708	264P370010	1N4148
D 901	264P376010	BYW56
D 902	264P376010	BYW56
D 903	264P376010	BYW56
D 904	264P376010	BYW56
D 905	264P371010	BYD33G
D 906	264P371010	BYD33G
D 907	264P371010	BYD33G
D 908	264P371010	BYD33G
D 909	264P371010	BYD33G
D 910	264P372010	BYV96E
D 911	264P377020	BYW95B
D 912	264P378020	BYW96E
D 913	264P377020	BYW95B
D 914	264P377020	BYW95B
D 952	264P372010	BYV96E
D 953	264P465060	EQA02-12B
D 954	264P371010	BYD33G
D 955	264P374010	1N4003G
D 956	264P374010	1N4003G
D 957	264P470010	EQA02-30AC/RD30EB3,
D 958	264P370010	1N4148

OTHER SEMICONDUCTORS

RP901	265P071050	POSITIVE THERMISTORPTH451C41BG180N

FILTERS

CF2P1	296P085010	CERAMIC TRAP
CF3001	296P014020	CERAMIC FILTER SFE-5.5MA
CF3002	296P014050	CERAMIC FILTER
CF701	299P046010	CERAMIC RESONATOR

DELAY LINES

DL601	337P027050	DELAY LINE

COILS

⚠	409B041050	DEGAUSSING		
L 251	349P165010	LF	150 μH-K	
L 2A1	325C101040	PEAKING	12 μH-K	
L 2J1	325C105080	PEAKING	3.9 μH-J	
L 2P1	325C167020	PEAKING	56 μH-J	
L 3J3	325C110010	PEAKING	1 μH-K	
L 3J4	325C110010	PEAKING	1 μH-K	
L 3Y1	321C031040	RF	10 μH-K	
L 3Y2	321C031040	RF	10 μH-K	
L 3Y3	321C031040	RF	10 μH-K	
L 3000	327P066010	SIF	5.5/5.74 MHz	
L 3001	327P066010	SIF	5.5/5.74 MHz	
L 3002	325C110010	PEAKING	1 μH-K	
L 3003	409P405010	PILOT		
L 551	321C030010	RF	1 μH-K	
L 553	411D009020	FERRITE CORE FILTER		
L 555	409P006080	FILTER		
L 556	333P012010	H-LIN.		
L 557	325C121030	PEAKING	10 μH-K	
L 5P1	409P408010	PCC		
L 5P2	409P407010	BRIDGE		
L 601	321C031040	RF	10 μH-K	
L 602	325C106040	PEAKING	12 μH-J	
L 603	349P173010	DEMODULATOR		
L 604	349P172010	BELL FILTER		
L 605	325C166060	PEAKING	18 μH-J	
L 606	349P174010	IDENT		
L 607	349P173010	DEMODULATOR		
L 608	349P173010	DEMODULATOR		
L 609	325C167020	PEAKING	56 μH-J	
L 610	325C167010	PEAKING	47 μH-J	
L 701	325C122010	PEAKING	47 μH-K	
L 702	325C122010	PEAKING	47 μH-K	
L 703	325C122010	PEAKING	47 μH-K	
L 704	325C122010	PEAKING	47 μH-K	
L 705	325C111030	PEAKING	10 μH-K	
L 706	325C111030	PEAKING	10 μH-K	
L 707	325C121030	PEAKING	10 μH-K	
L 708	325C111030	PEAKING	10 μH-K	
L 709	325C110010	PEAKING	1 μH-K	
L 7701	321C031060	RF	15 μH-K	
L 7703	325C111030	PEAKING	10 μH-K	
L 7704	325C111030	PEAKING	10 μH-K	
L 7705	325C111030	PEAKING	10 μH-K	
L 7706	325C111030	PEAKING	10 μH-K	
L 902	325D059060	PEAKING	390 μH-K	
L 904	411P001070	FERRITE LEAD		
L 905	411P001070	FERRITE LEAD		
L 991	351P011020	LINE FILTER		
L 994	351P047020	LINE FILTER		

TRANSFORMERS

T 551	336P009010	H. DRIVE	
⚠ T 553	334B081080	FLYBACK	

SYMBOL NO. / SYMBOL Nr.	PART NO. / ERSATZTEIL Nr.	DESCRIPTION / BESCHREIBUNG	D
T 901	350P369050	POWER	
⚠ T 951	350P375020	POWER	

VARIABLE RESISTORS

VR1D0	127C080080	VR-SEMIFIXED 1/5W B10KΩ-M	
VR201	127C081020	VR-SEMIFIXED 1/5W B100KΩ-M	
VR202	127C081010	VR-SEMIFIXED 1/5W B50KΩ-M	
VR2Y1	120C341020	VR-PCB 1/20W B10KΩ-30TM CS	
VR3000	127C080020	VR-SEMIFIXED 1/10W B300Ω-M	
VR3001	127C080010	VR-SEMIFIXED 1/5W B200Ω-M	
VR3002	127C080090	VR-SEMIFIXED 1/5W B20KΩ-M	
VR401	127C081040	VR-SEMIFIXED 1/10W 300KΩ-M	
VR402	127C081030	VR-SEMIFIXED 1/10W B200KΩ-M	
VR501	127C081010	VR-SEMIFIXED 1/5W B50KΩ-M	
VR502	127C080080	VR-SEMIFIXED 1/5W B10KΩ-M	
VR5P1	127C080070	VR-SEMIFIXED 1/5W B5KΩ-M	
VR5P2	127C080090	VR-SEMIFIXED 1/5W B20KΩ-M	
VR601	127C080010	VR-SEMIFIXED 1/5W B200Ω-M	
VR651	127C020070	VR-SEMIFIXED 1/5W B5KΩ-N	
VR652	127C020070	VR-SEMIFIXED 1/5W B5KΩ-N	
VR653	127C020070	VR-SEMIFIXED 1/5W B5KΩ-N	
VR654	127C020040	VR-SEMIFIXED 1/5W B1KΩ-N	
VR655	127C020040	VR-SEMIFIXED 1/5W B1KΩ-N	
VR701	127C080070	VR-SEMIFIXED 1/5W B5KΩ-M	

RESISTORS

⚠ R 3B6	103P378060	FUSE	1/4W 3.3Ω-J
⚠ R 3B7	103P378060	FUSE	1/4W 3.3Ω-J
R 556	102P082090	CEMENT WIRE	10W 10Ω-K
⚠ R 559	103P378040	FUSE	1/4W 2.2Ω-J
⚠ R 563	103P397090	FUSE	1/2W 0.82Ω-J
⚠ R 565	103P442020	FUSE METAL	1W 560Ω-K
⚠ R 671	103P448050	FUSE METAL	1W 2.7Ω-K
R 901	102P080040	CEMENT WIRE	5W 4.7Ω-K
⚠ R 911	103P371020	FUSE	1/4W 82Ω-J
⚠ R 975	103P391080	FUSE	1/2W 270Ω-J

CAPACITORS AND TRIMMERS

⚠ C 901	189P091010	CERAMIC AC	AC400V E4700PF-M
⚠ C 902	189P091010	CERAMIC AC	AC400V E4700PF-M
⚠ C 903	189P067040	CERAMIC AC	FZ VA1 0.01μF-P
C 907	185D059030	ELECTROLYTIC	H385V/H400V 150μF-M
⚠ C 991	189P033050	C-M-MF/PP-AC	AC125/250V 0.1μF-M
VC601	202P109030	TRIMMER	5.5PF-30PF
VC7701	202P109030	TRIMMER	5.5PF-30PF

SWITCHES

S 2P1	432C031010	PUSH	
S 3J1	432C031010	PUSH	
S 401	434C021010	LEVER	
S 7Y1	432C031010	PUSH	
S 7Y2	129C129040	VR-BLOCK	SWX14 L=21.5
⚠ S 991	432P076010	PUSH	

MISCELLANEOUS

⚠	449C031090	CRT SOCKET	
	451C092010	JACK-AERIAL	
⚠ F 901	283D047030	FUSE	T1.6A
⚠ F 991	283D047040	FUSE	2A-T
J 2J1	451C059010	CONNECTOR	
J 2P1	449C090010	SOCKET DIN MINI	
J 3P1	440C142030	PIN JACK BOARD 1P	
J 3P2	440C142040	PIN JACK BOARD 1P	
J 3Y1	451C065010	HEADPHONE JACK	
⚠ PC951	268P039010	PHOTO COUPLER	ON3105-V
SP391	480P653010	SPEAKER	
SP392	480P400060	SPEAKER	
SP393	480P653010	SPEAKER	
SP394	480P400060	SPEAKER	
X 601	285P068020	CRYSTAL RESONATOR	8.8MHz
X 7701	285P062020	CRYSTAL RESONATOR	13.875MHz
X 7702	285P064020	CRYSTAL RESONATOR	6.000MHz
X 7703	285P064020	CRYSTAL RESONATOR	6.000MHz
Z 701	939P164010	REMOCON PREAMP UNIT	
⚠ Z 901	299P087050	PROTECTOR	
⚠ Z 902	299P087010	PROTECTOR	
⚠ Z 903	299P087060	PROTECTOR	

PRINTED CIRCUIT BOARD ASSY'S

⚠	920A348040	MAIN PCB ASSY	〈CT-2531SET〉
⚠	920A348050	MAIN PCB ASSY	〈CT-2531EST(Y)〉
⚠	920D111090	CONTROL PCB ASSY	
⚠	920D112050	VC/RGB PCB ASSY	
⚠	920D115070	CRT PCB ASSY	
⚠	920D172020	PRICONNECTOR PCB ASSY	
⚠	930C205020	PCC PCB ASSY	
⚠	930C235010	SOUND PCB ASSY	
⚠	930C257010	Y/C-SW PCB ASSY	
⚠	930B268020	FASTEXT PCB ASSY	

MECHANICAL PARTS

669D107010	SCREW	(10P)
669D130040	SCREW	4X16 83AF
669D212010	SCREW	(10P)
669D221020	SCREW	SCREW-TB(10P)
669D221060	SCREW	SCREW-TB(10P)

COSMETIC PARTS

⚠	246C022030	AC POWER CORD
	641D173010	CLIP

SYMBOL NO. / SYMBOL Nr.	PART NO. / ERSATZTEIL Nr.	DESCRIPTION / BESCHREIBUNG	B
⚠	700C089010	BACK COVER ASSY	⟨CT-2531SET⟩
⚠	700C091020	BACK COVER ASSY	⟨CT-2531EYT(Y)⟩
	701A396090	FRONT PANEL	⟨CT-2531SET⟩
	701A419010	FRONT PANEL	⟨CT-2531EST(Y)⟩
	702A271020	GLILLE SPEAKER	
	702C688090	DOOR	⟨CT-2531EST(Y)⟩
	702C689010	DOOR	⟨CT-2531SET⟩
	702D202010	GRILLE SPEAKER UNIT(L)	
	702D202020	GRILLE SPEAKER UNIT(R)	
	704C562010	BUTTON POWER	
	704D867010	PUSH-P KNOB	
	761B137070	TERMINAL BOARD	
	761C273010	DOOR CATCH	
	771D045010	PAD	
	960D078010	CABINET	⟨CT-2531SET⟩
	960D079010	CABINET	⟨CT-2531EST(Y)⟩

PACKING PARTS AND ACCESSORY

	802C876040	PACKING CASE	⟨CT-2531SET⟩
	802C876050	PACKING CASE	⟨CT-2531EST(Y)⟩
	803A150010	PACKING CUSHION	
	829D139010	PACKING SHEET	
	831B020060	PACKING BAG	
	831D110090	PACKING BAG	
	871C822080	INSTRUCTION BOOK	⟨CT-2531SET⟩
	871C822090	INSTRUCTION BOOK	⟨CT-2531EST(Y)⟩
⚠	939P212030	REMOTE HAND UNIT	⟨CT-2531EST⟩
⚠	939P212040	REMOTE HAND UNIT	⟨CT-2531EST(Y)⟩

CT-2531EST VIF-PACK

D1	MA221
Q1	2SC2757,2SC2404,2SC3125
Q2~4	2SD601A,2SD601
Q6	RTIN44IC,DTC144EK,UN2213
Q7	RTIN144C,DTC114YK,UN2214
IC1	AN5138NK
X1	F34AM
X2	TPS5R5MW,EFCS5M74MW3
X3,4	EFCS5R5MS5B
X5,6	EFCS5R74MS5B
T1	
T2	EIV7EN084B
T3	EIV7EN085B
T4	
T5,6	EIV7EN017B

11	VIDEO OUT2
10	VIDEO OUT1
9	EE
8	—
7	AUDIO OUT2
6	AUDIO OUT1
5	AFT DEFEAT

4	AGC
3	AFT
2	+B
1	IF

※This value is not fixed

CT-2531EST(Y) VIF-PACK

D1	MA221
Q1	2SC2757,2SC2404,2SC3125
Q2~4	2SD601A,2SD601
Q6	RTIN44IC,DTC144EK,UN2213
Q7	RTIN144C,DTC114YK,UN2214
IC1	AN5138NK
X1	F34AM
X2	TPS5R5MW,EFCS5M74MW3
X3,4	EFCS5R5MS5B
X5,6	EFCS5R74MS5B
T1	
T2	EIV7EN084B
T3	EIV7EN085B
T4	
T5,6	EIV7EN017B

※This value is not fixed

CT-2531EST(Y) VIF-PACK

D1	MA221
Q1	2SC2757,2SC2404,2SC3125
Q2~4	2SD601A,2SD601
Q6	RTIN44IC,DTC144EK,UN2213
Q7	RTIN144C,DTC114YK,UN2214
IC1	AN5138NK
X1	F34AM
X2	TPS5R5MW,EFCS5M74MW3
X3,4	EFCS5R5MS5B
X5,6	EFCS5R74MS5B
T1	
T2	EIV7EN084B
T3	EIV7EN085B
T4	
T5,6	EIV7EN017B

※This value is not fixed

1 IF

※R44 100
※C6 6P
※C4 5P
※C5 47P
※R3 470
※C3 6P
※C1 5P
※C2 27P
※R1 470
※L1 0.33μ
T6
T5

1 IF

5V

R7728 2200
R7757 10K
L7703 10μH

CCT

IC7707
TC5565AP/APL
—10/12/15

8K8 STATIC-RAM

IC7706
SAA 5243

R7749 5.6K
C7724 J-100 SL

TA5 FOR PRINTER INTERFACE

R7744 2.2K
R7745 1.2K

TA1 FOR PRINTER INSERFACE
TA2 FOR PRINTER INTERFACE

C7719 Z-.022 B
C7720 50V 2.2μ

TA4 FOR PRINTER INTERFACE

TA3 FOR PRINTER INTERFACE

12V

R-OUT
Q7701
JC501-Q

G-OUT
Q7702
JC501-Q

B-OUT
Q7703
JC501-Q

BLANKING-OUT
Q7705
JC501-Q

R7718 3.9K
R7719 3.9K
R7720 3.9K
L7704 10μH
L7705 10μH
L7706 10μH
D7701 1N4148
D7702 1N4148
D7703 1N4148
R7726 820
R7729 820
R7730 820
R7723 82
R7724 82
R7725 82

R7756 8.2K
R7721 10K
R7722 5.6K
R7755 330
D7705 1N4148
R7732 2.2K
R7727 82
D7707 EQA02-05CD /RD5.1EB1,B2

SYNC-OUT

PICTURE-ON-OUT

R7701 220
R7703 220

CLOCK
DATA

TX2

TX1

PCB-MAIN TX1

⚠ PCB-FASTEXT

IC1 AN5138NK

CT-2531EST
CT-2531EST(Y)(2/2)

※This value is not fixed

※This value is not fixed

2	TP
1	IF

E

G

H

I

J

D7708 1N4148

IC7708 PCD 8572

NV-RAM

C7728 K-2200 B

R7757 10K

L7703 10μH

C7721 J-.022

C7722 16V 22μ

R7733 5.6K

R7734 5.6K

R7753 100

TA8 FOR PRINTER INTERFACE

MICROCOMPUTER

R7762 10K

R7764 10K

R7761 270

C7701 50V 1μ

X7703 8MHZ

C7702 J-22 CH

C7703 J-22 CH

R7711 1M

D7706 1N4148

IC7704 MAB 8461

C7704 J-15 SL

C7705 K-1000 B

C7706 K-470 B

C7707 F-.022 B

C7708 K-270 B

C7709 J-100 SL

C7710 J-15 CH

X7701 13.875MHZ

C7711 J-27 SL

L7701 15μH

VIP2

C7712 50V 2.2μ NP

C7713 J-.068 50V MF

R7749 5.6K

C7724 J-100 SL

R7712 68K

C7714 K-220 SL

C7715 K-.047 SR

X7702 8MHZ

C7717 K-.047 SR

C7716 CH

R7713 330

VC7701

C7723 Z-.01

TP1

R7744 2.2K

R7745 1.2K

TA1 FOR PRINTER INSERFACE

TA2 FOR PRINTER INTERFACE

TA5 FOR PRINTER INTERFACE

TA3 FOR PRINTER INTERFACE

TA4 FOR PRINTER INTERFACE

IC7705 SAA5231

IC7706 SAA 5243

CCT

C7719 F-.022 B

C7720 50V 2.2μ

R7715 10K

R7754 1.5K

Q7706 JC501-Q SYNC-OUT

R7714 2.2K

C7718 25V 47μ

R7748 1.2K

R7716 2.2K

R7717 270

C7729 1200

R7752 220

C7727 .1 TF

R7763 82

R-OUT Q7701 JC501-Q

G-OUT Q7702 JC501-Q

B-OUT Q7703 JC501-Q

R7718 3.9K

R7719 3.9K

R7720 3.9K

L7704 10μH

L7705 10μH

L7706 10μH

D7701 1N4148

D7702 1N4148

D7703 1N4148

R7728 820

R7729 820

R7730 820

R7723 82

R7724 82

R7725 82

R7756 8.2K

R7721 10K

R7755 330

D7705 1N4148

R7732 2.2K

SYNC-OUT

PICTURE-ON-OUT

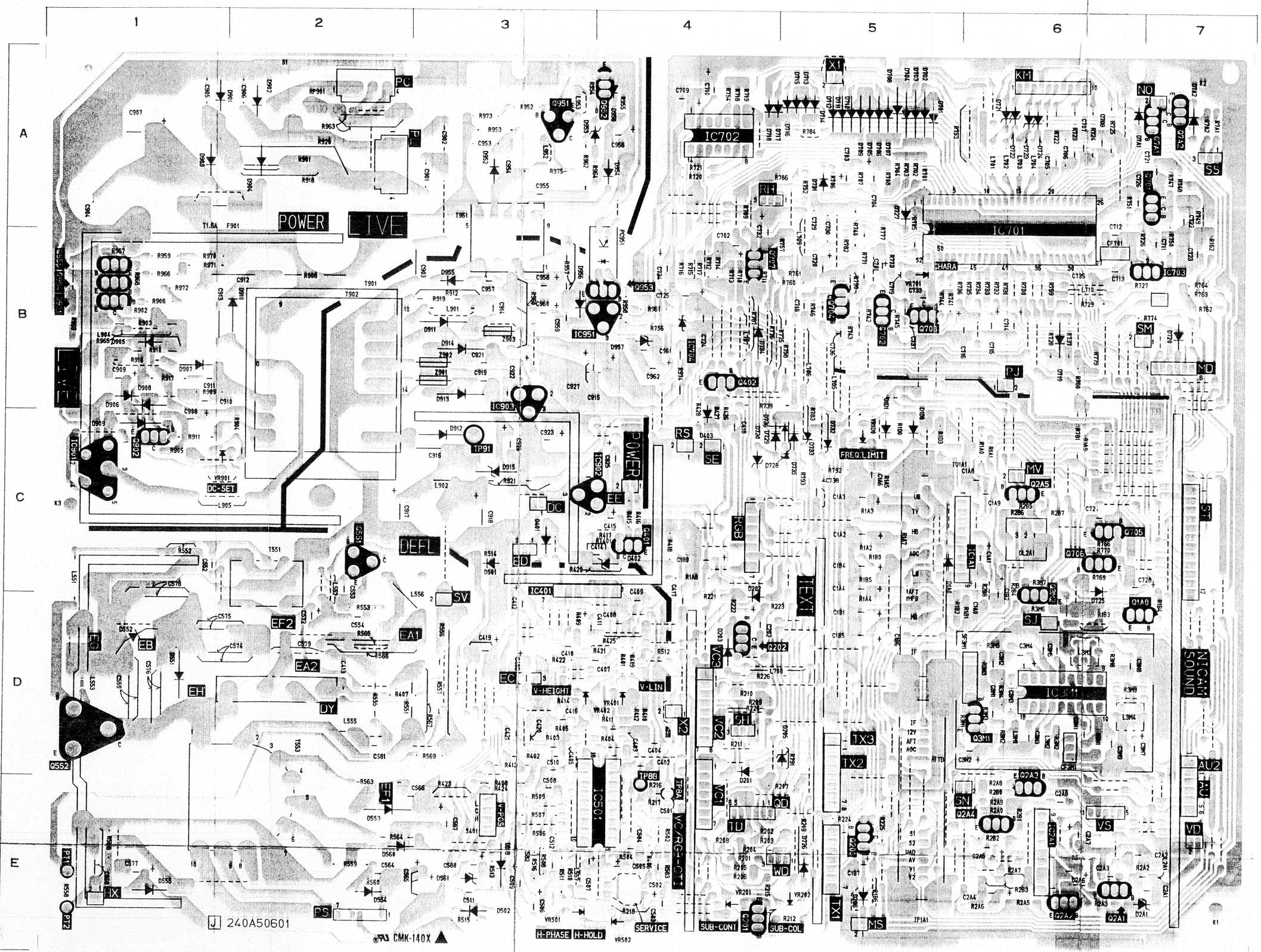
TX2

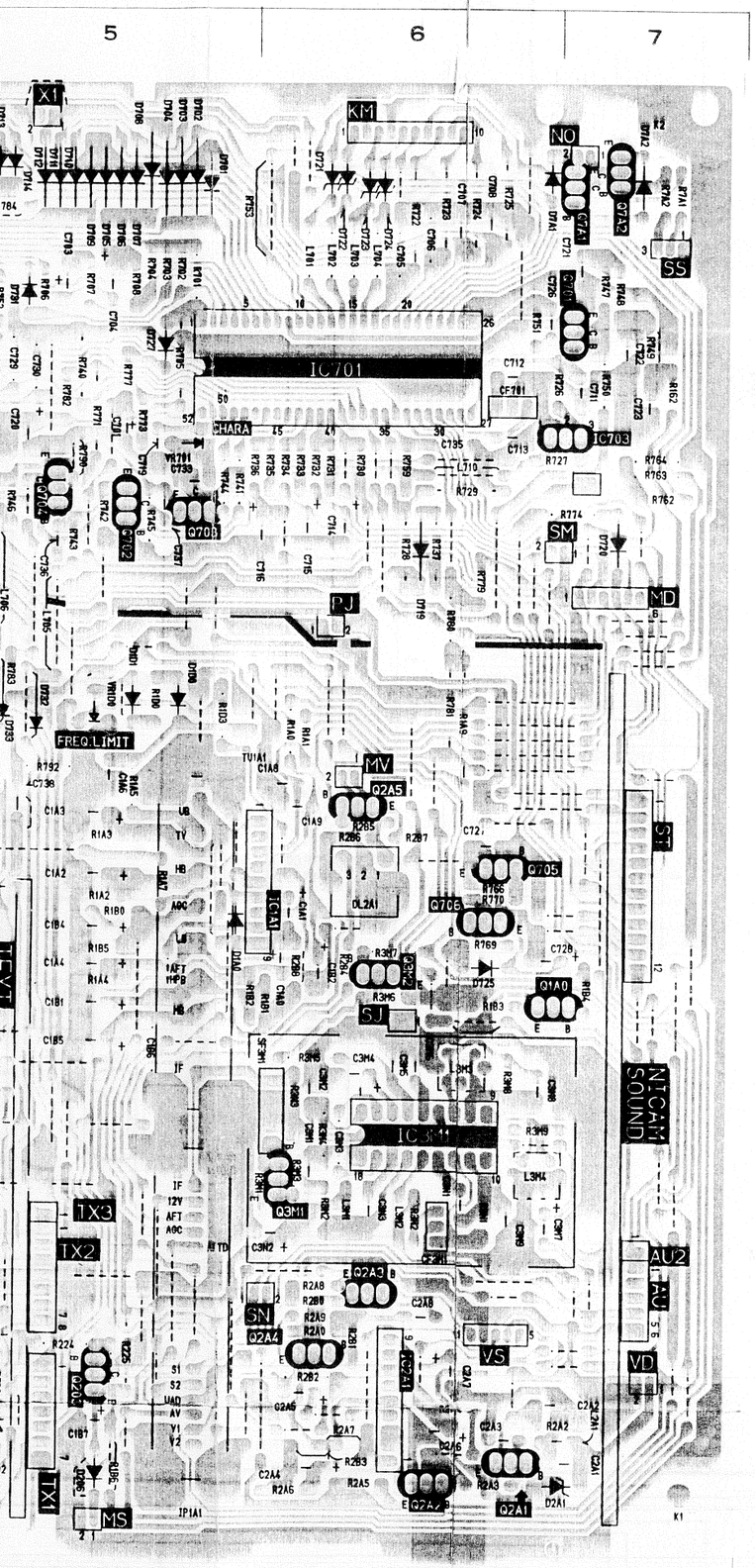
PCB-MAIN TX2

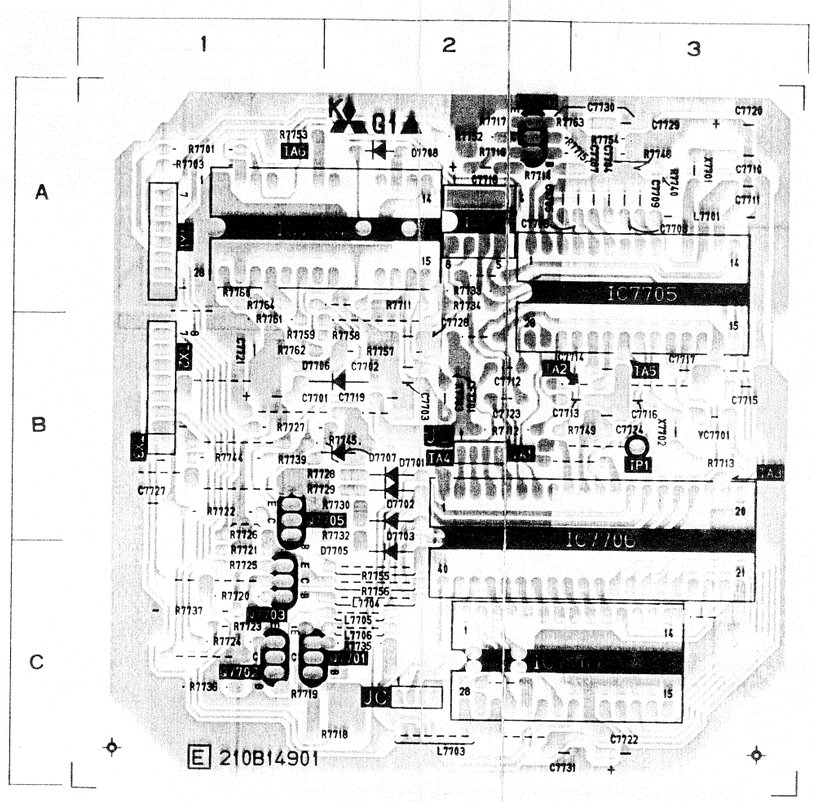
TX1

PCB-MAIN TX1

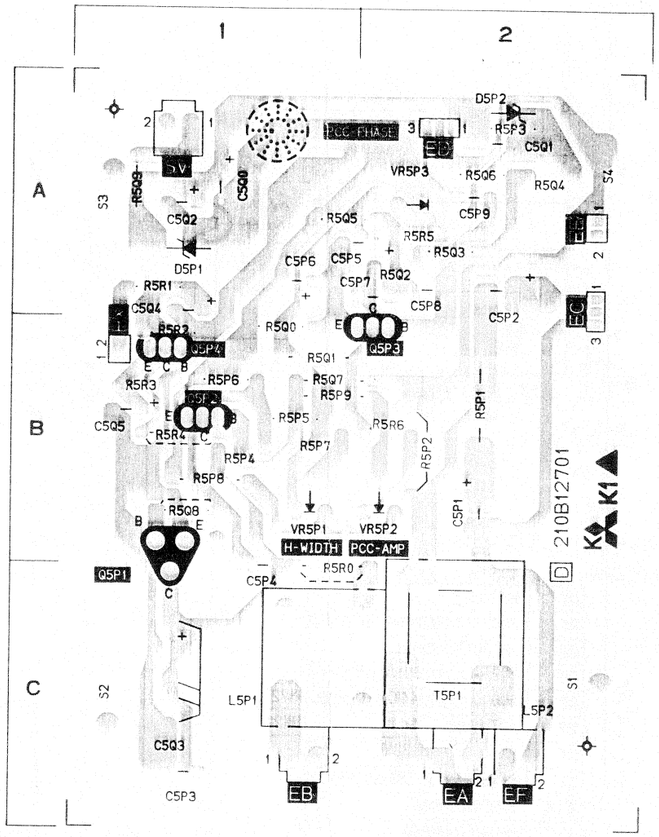
PCB-F


POWER
LIVE
NEUT
IC702
IC701
IC703
IC951
IC903
IC902
IC401
IC501
IC3M1
X1
X2
KM
NO
SS
SM
MD
PJ
MV
ST
SJ
SN
VS
VD
AU2
AU
TX3
TX2
TX1
MS
SE
RS
DC
EE
ED
SV
EF2
EA1
EA2
EB
EC
EH
DY
EF1
PT1
PT2
PS
IX
DEFL
RGB
TEXT
POWER
RH
CHARA
FREQ.LIMIT
V-HEIGHT
V-LIN
H-PHASE
H-HOLD
SERVICE
SUB-CONT
SUB-COL
NICAM SOUND
DC-SET
J 240A50601
CMK-140X
PCB-MAIN

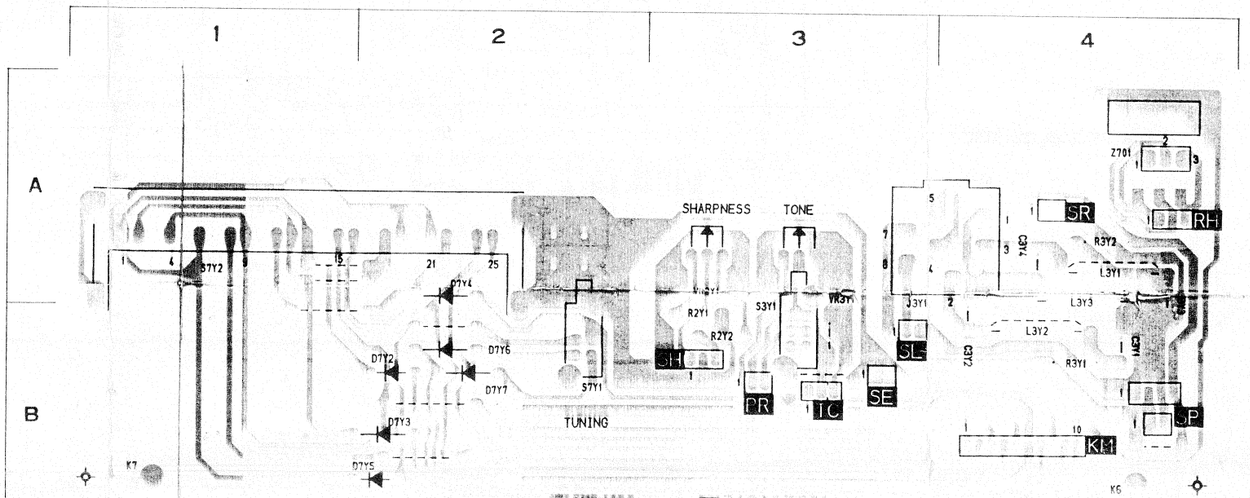


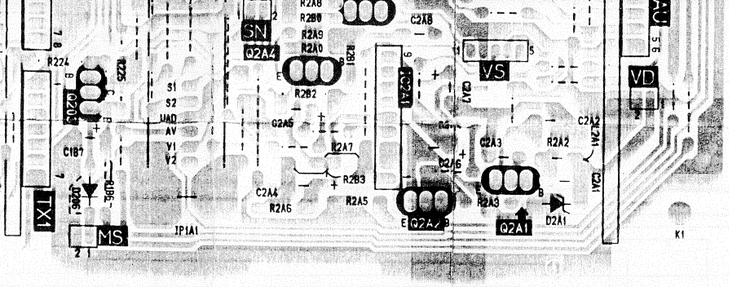


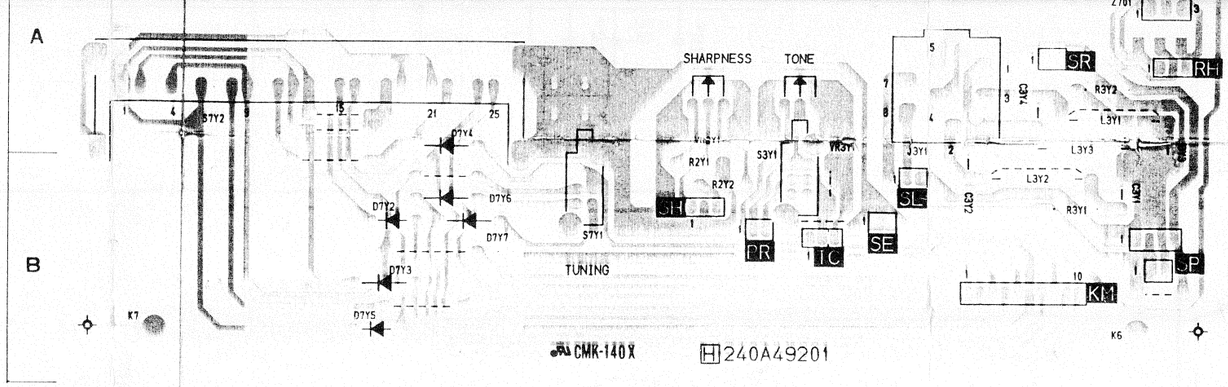
PCB-FASTEXT



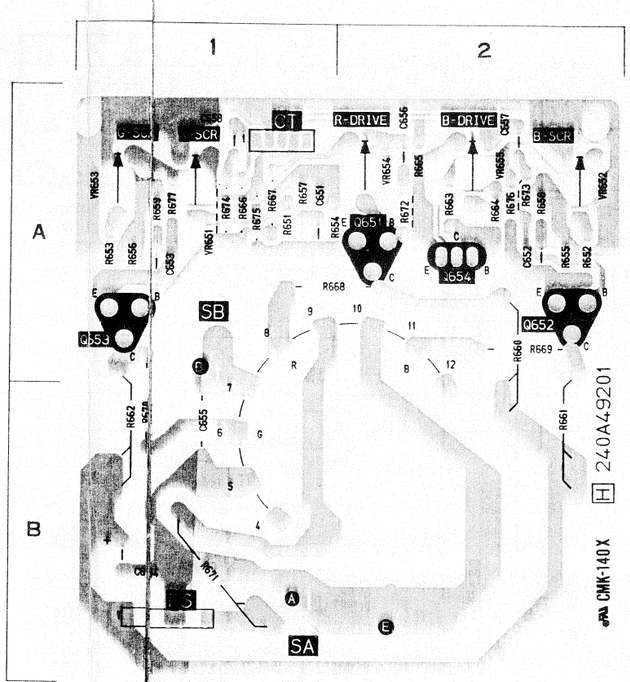
PCB-PCC



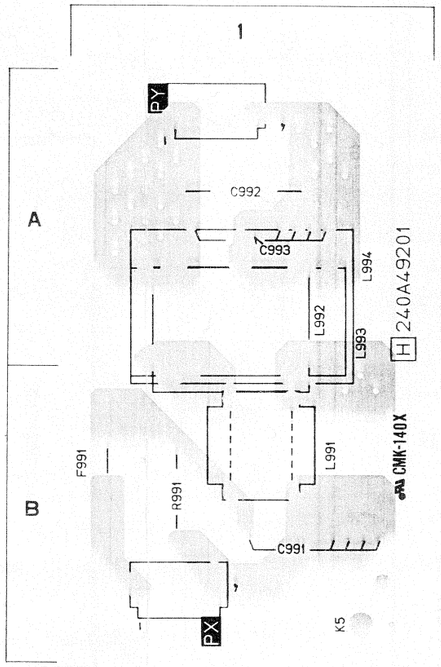




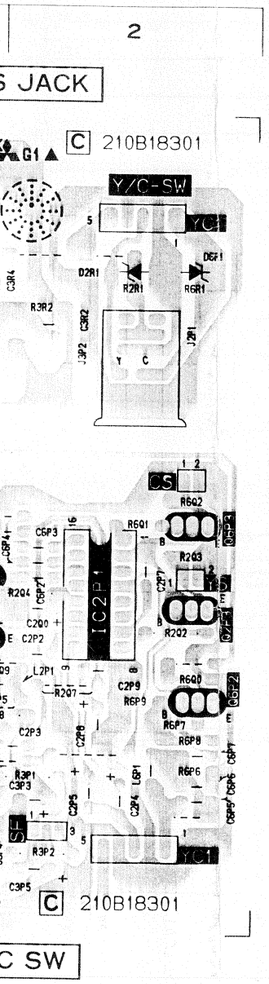
PCB-CONTROL



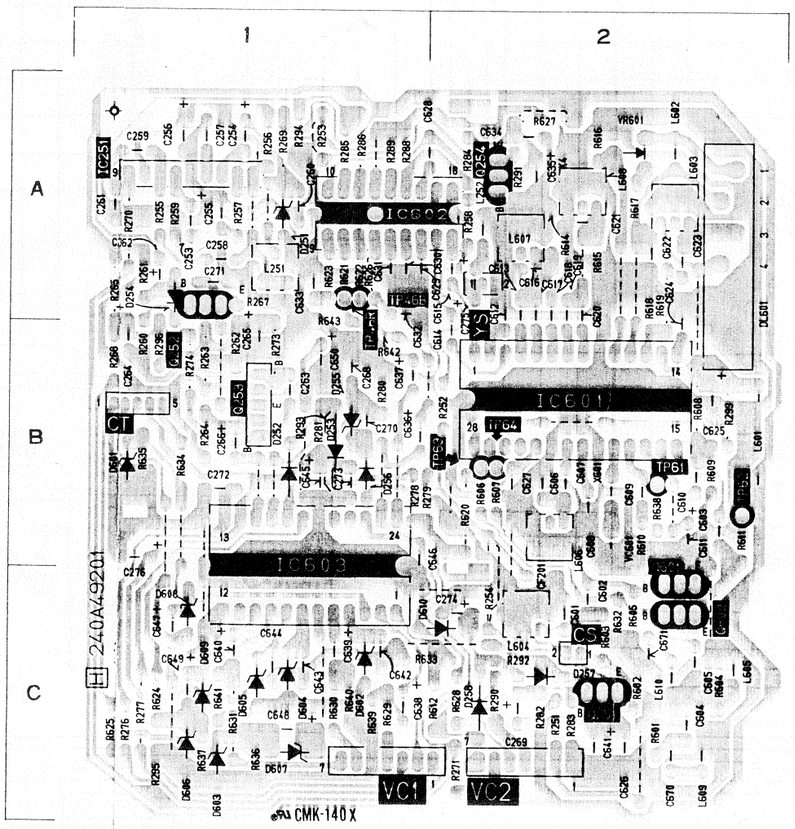
PCB-CRT



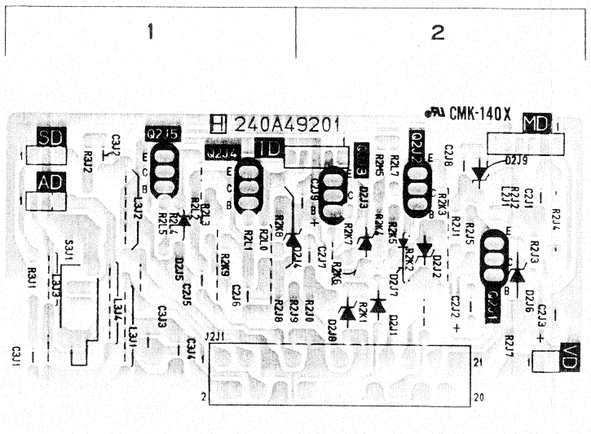
PCB-POWER-SUB



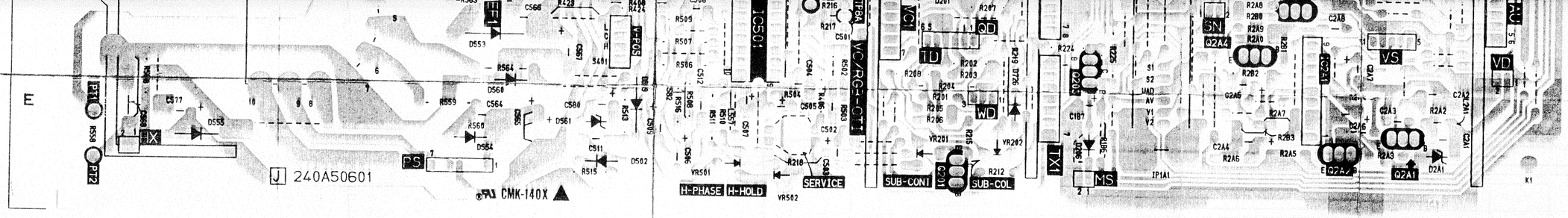
C SW



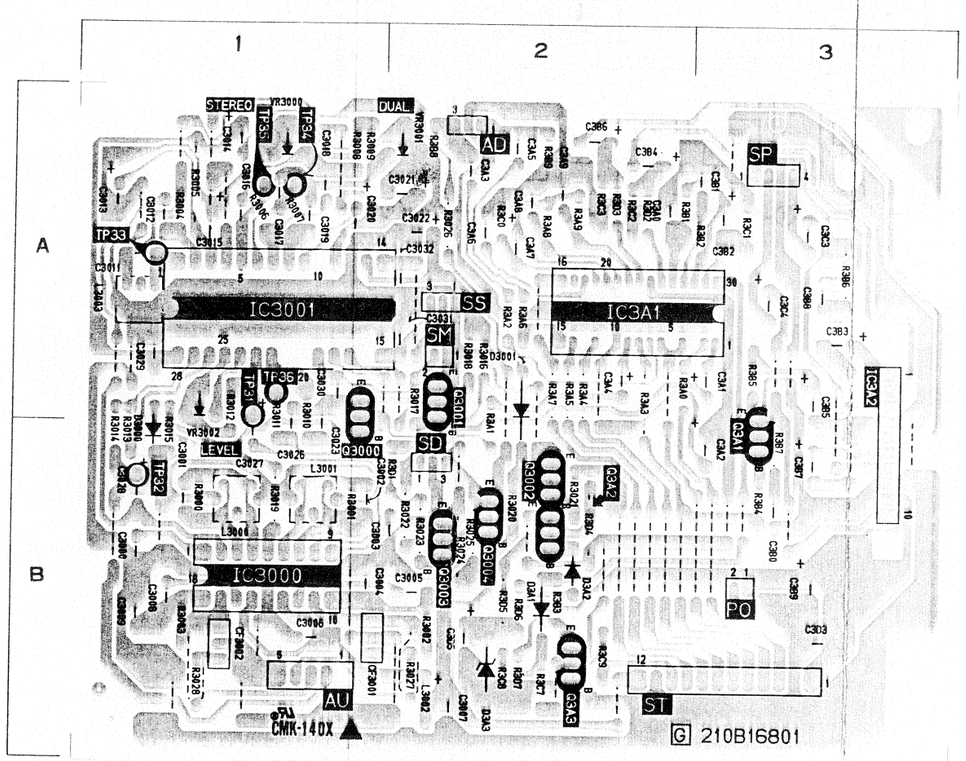
PCB-VC/RGB-CTI



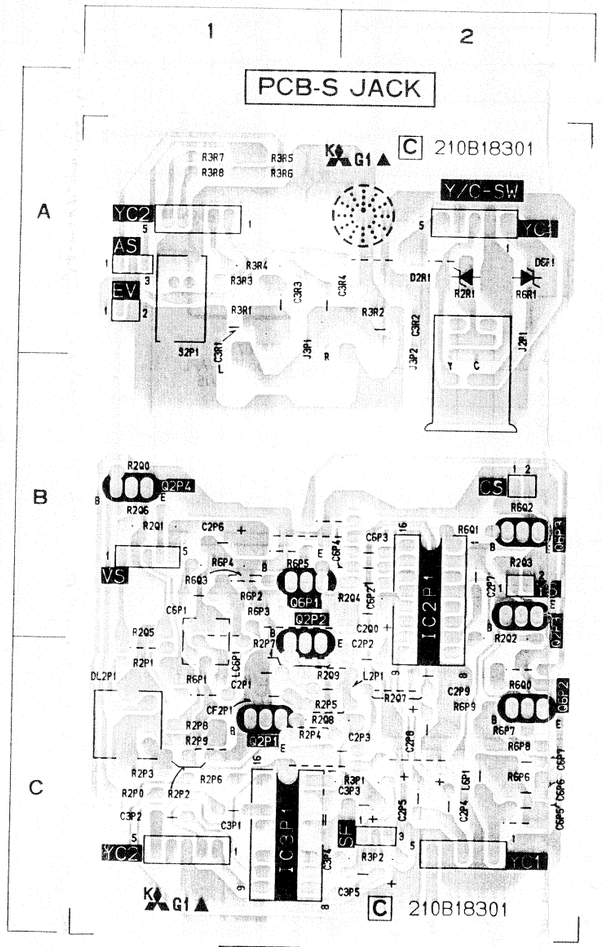
PCB-PERICONNECTOR



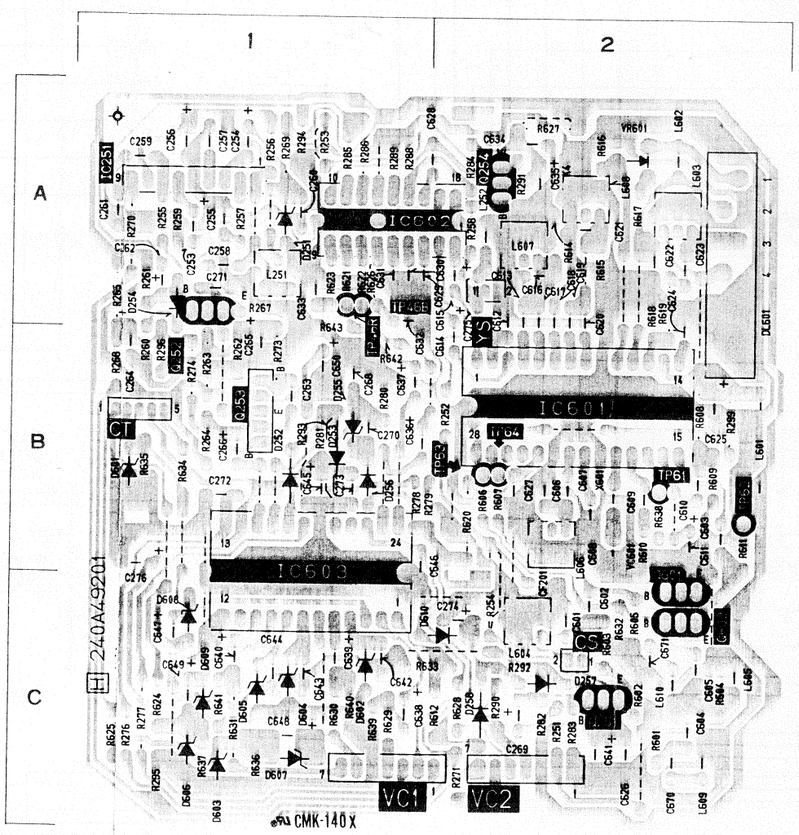
PCB-MAIN



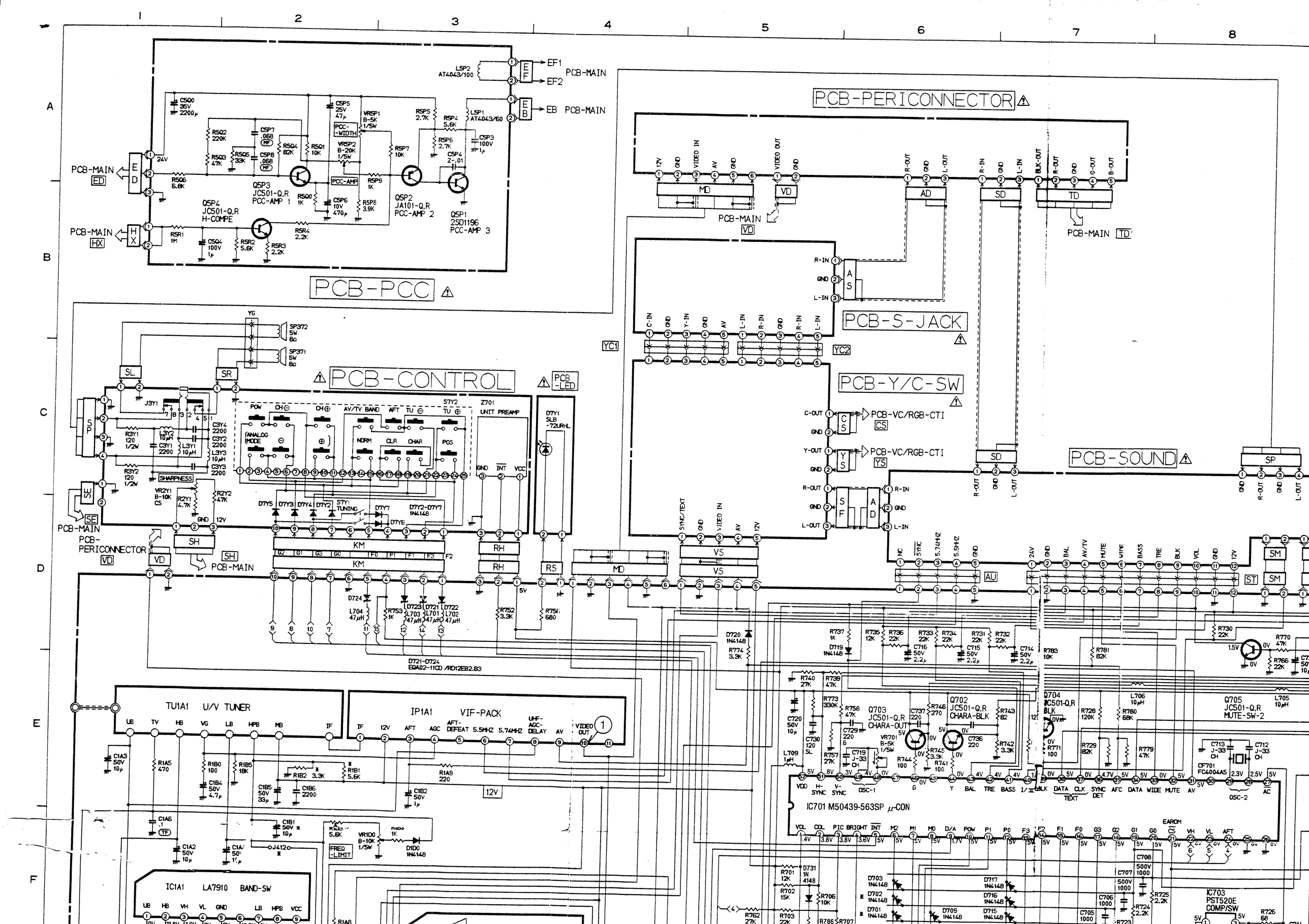
PCB-SOUND



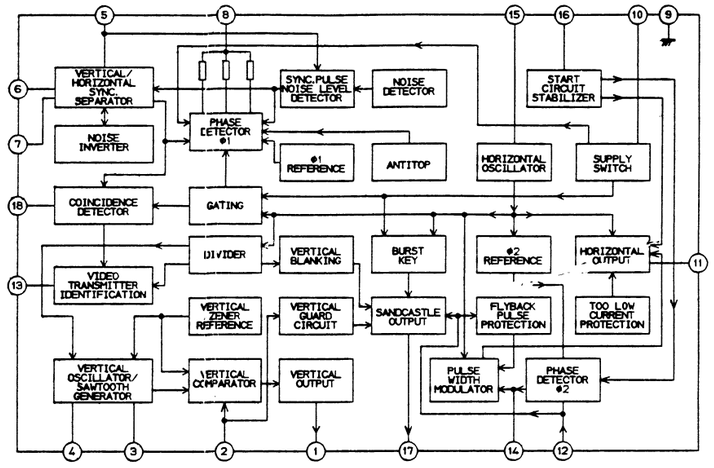
PCB-Y/C SW



PCB-VC/RGB-CTI


PCB-PCC
PCB-MAIN ED
PCB-MAIN HX
EF1
EF2
PCB-MAIN
EB PCB-MAIN
Q5P3 JC501-Q,R PCC-AMP 1
Q5P4 JC501-Q,R H-COMPE
Q5P2 JA101-Q,R PCC-AMP 2
Q5P1 2SD1196 PCC-AMP 3
PCB-PERICONNECTOR
PCB-MAIN VD
PCB-MAIN TD
PCB-S-JACK
PCB-Y/C-SW
PCB-VC/RGB-CTI
PCB-SOUND
PCB-CONTROL
PCB-LED
PCB-MAIN SE
PCB-PERICONNECTOR VD
PCB-MAIN SH
TU1A1 U/V TUNER
IP1A1 VIF-PACK
IC1A1 LA7910 BAND-SW
IC701 M50439-563SP μ-CON
IC703 PST520E COMP/SW
Q703 JC501-Q,R CHARA-OUT
Q702 JC501-Q,R CHARA-BLK
Q704 JC501-Q,R BLK
Q705 JC501-Q,R MUTE-SW-2
D721-D724 EQA02-11CD /RD12EB2.B3
SP372 5W 8Ω
SP371 5W 8Ω

SCHEMATIC DIAGRAM MODELS : CT-2531EST
CT-2531EST(Y)



IC501
TDA2579A

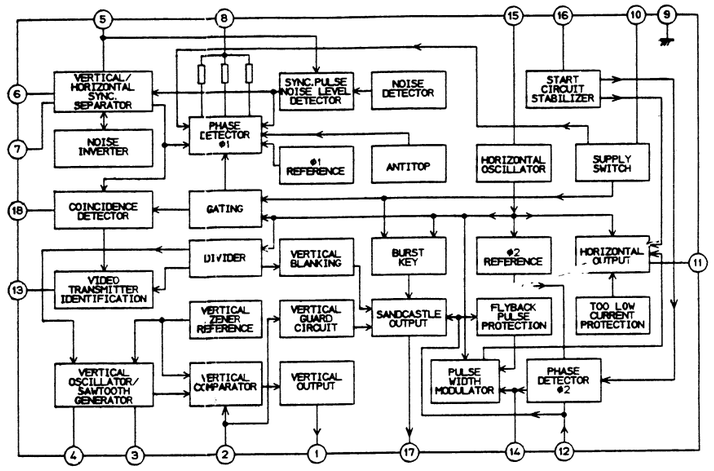
* DIFFERENCE TABLE
○ :NECESSARY

PARTS NO.	CT-2531EST	CT-2531EST(Y)
D701	OPEN	○
D702	OPEN	○
C1B1	○	OPEN
J412	○	OPEN
R1B1	OPEN	○
R1B2	OPEN	○

⚠ Sicherheitshinweis :

Die mit diesem Symbol gek
haben spezielle Eingenschaften un
und Leistungsfahigkeitwichtig.
Beim Austausch der Bauteile nur
und Eigenschaften verwenden, son
Leistunf des Gerates gefahrdet.
In Hinsicht auf die Genauigkeit in
Teileliste im Servicehandbuch.

RAM MODELS : CT-2531EST
CT-2531EST(Y)



01
2579A

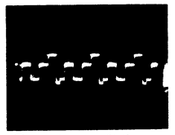
⚠ Sicherheitshinweis :

Die mit diesem Symbol gekennzeichneten Bauteile haben spezielle Eingenschaften undsind tur die Sicherheit und Leistungsfahigkeitwichtig.
Beim Austausch der Bauteile nur Teile mit gleichem Wert und Eigenschaften verwenden, sonst ist die Sicherheit und Leistunf des Gerates gefahrdet.
In Hinsicht auf die Genauigkeit in die Ersetzung siehe die Teileliste im Servicehandbuch.

⚠ SERVING PRECAUTION

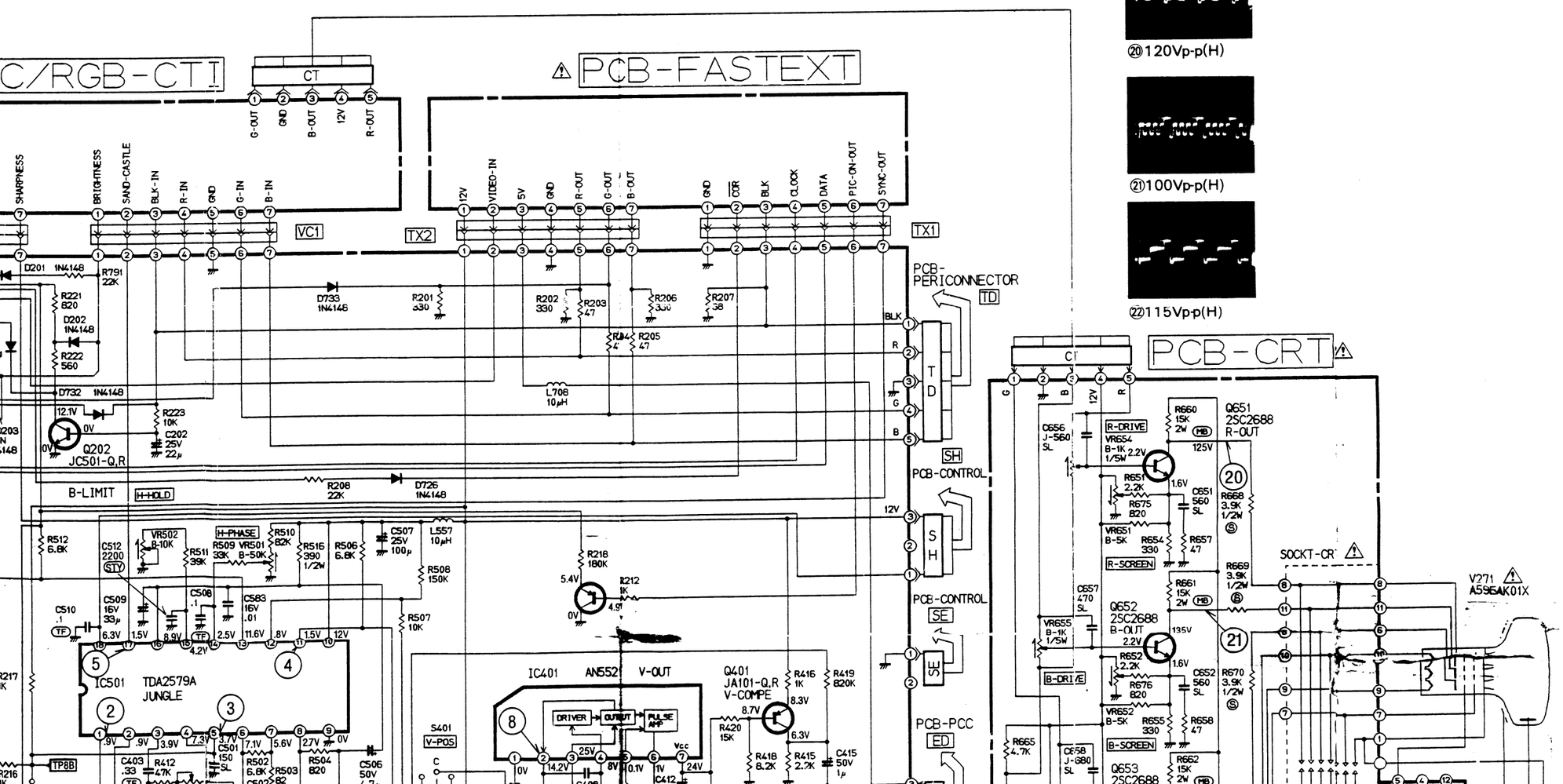
SYMBOLS INDICATE COMPONENTS HAVING SPECIAL CHARACTERISTICS IMPORTANT TO SAFETY AND PERFORMANCE. THERFORE REPLACEMENT OF ANY SAFETY PARTS SHOULD BE IDENTICAL IN VALUE AND CHARACTERISTICS. FOR ACCURACY OF THE REPLACEMENT REFER TO THE PARTS LIST OF SERVICE MANUAL.
DON'T DEGRADE THE SAFETY OF THE RECEIVERS THROUGH IMPROPER SERVICING.

⑳120Vp-p(H)



㉑100Vp-p(H)

㉒115Vp-p(H)



NOTE 1:

1. The unit of resistance is "ohm" with no symbol.
   Accordingly, K = 1000 ohms
   M = 1000K ohms.
2. The wattage of resistors, if not specifically designated, **is less than 1/4 watt.**
3. **Resistors, if not specifically designated, are carbon resistors.**
4. **The marks of resistors are as follows:**
   - (CE) : Cemented resistor
   - (MB) : Metal oxide film resistor (type B)
   - (MPC) : Metal plate cement resistor.
   - (ML) : Metal linear resistor.
   - (S) : Fixed composition resistor
   - (W) : Wire wound resistor
   - (M) : Metal film resistor
5. **The tolerance of resistor value, if not specifically designated, is: ±5%, K = ±10% M = ±20%**
6. **The unit of capacitance, if not specifically designated, is:**
   a) μF, for numbers less than 1
   b) PF, for numbers more than 1
7. **Capacitors, if not specifically designated are Ceramic capacitors except electrolytic capacitors.**
8. **The marks of capacitors are as follows:**
   - (ALM) : Aluminus electrolytic capacitor
   - (MF) : Polyester capacitor
   - (PP) : Polypropylene film capacitor
   - (TANT) : Tantalum capacitor
   - (TF) : Twin film capacitor.
   - (MF.PP) : Polyester polypropylene film capacitor.
   - (MPP) : Metallize plastic film capacitor.
   - (NP) : Non polarized electrolytic capacitor.
   - (PS) : Styrol capacitor.
   - (SC) : Semi conductor capacitor.
   - ✱ : Electrolytic capacitor
9. **The DC working voltage of capacitor, if not specifically designated is: 50V**
10. **The tolerance of capacitor value, if not specifically designated is: ±10% for polyester capacitor**
    ±5% for ceramic capacitor
    and J =±5% K =±10% M =±20% P = +100% −0%
    C =±0.25PF D =±0.5PF F =±1PF Z = +80% −20% N = ±30%

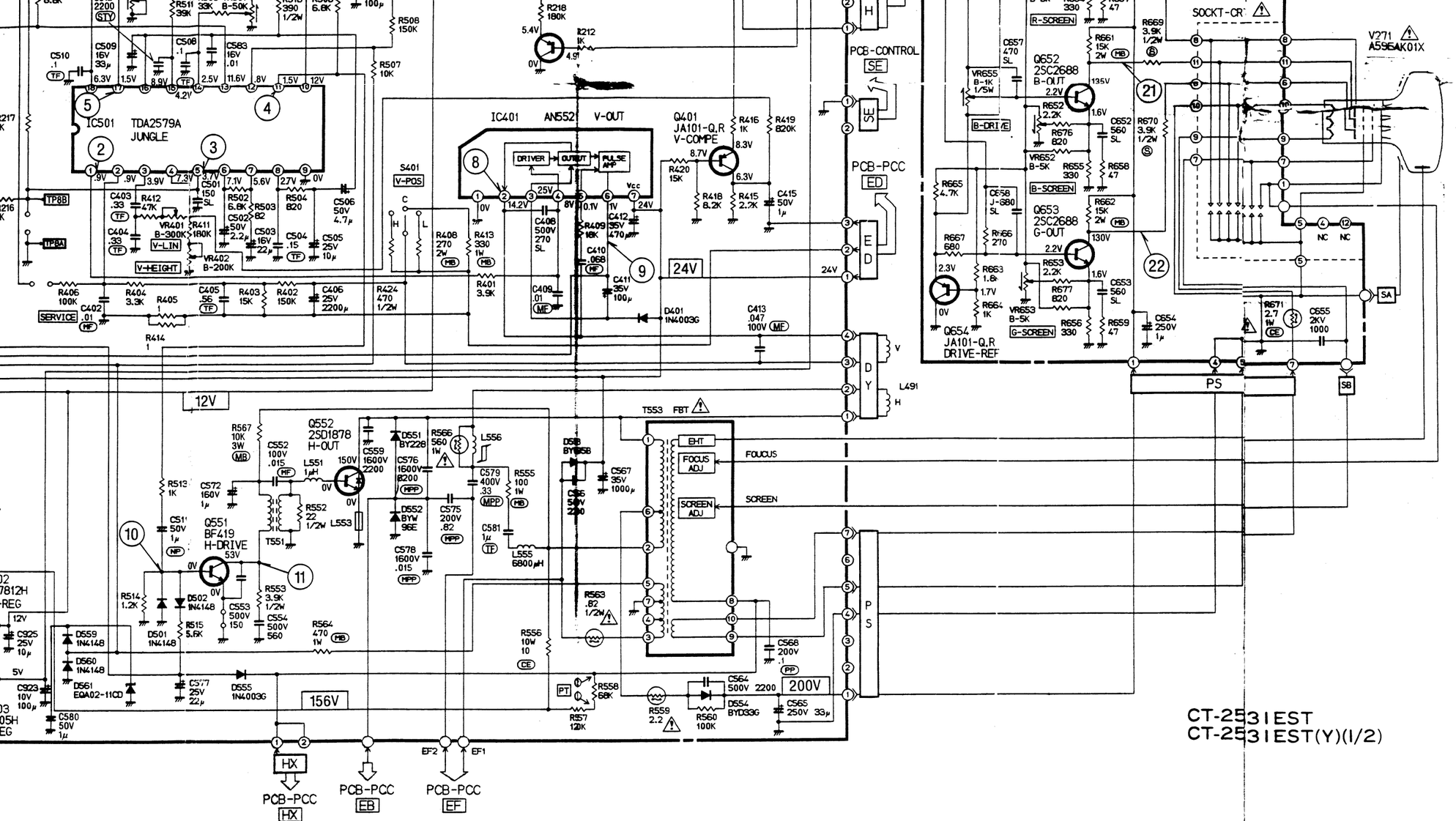
SPECIFIC SYMBOL	
Zener Diode	Varistor
Varicap	Crystal unit
Posistor	Air Gap
Thermistor	Part (resistor) attached on the copper-foil side of PCB
Fusible Resistor	Ceramic filter

NOTE 2:

1. DC voltages were measured from points indicated to the circuit ground with a high-Z voltmeter.
2. Waveforms were taken with offset PAL/SECAM colour bar signal.
3. This is a basic schematic diagram. Some sets may be subject to modification according to engineering improvement.

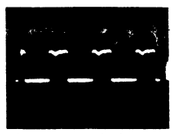
Hinweis 1 :

1. Bezeichnung der Widerstände
   Keine Bezeichnung = Ohm
   K = 1000 Ohm
   M = 1000 K Ohm
2. [redacted]
3. [redacted]
4. **Die Symbole für die Widerstände sind wie folgt:**
   - (CE) : Zementwiderstände
   - (MB) : Metalloxyd-Widerstände (Type B)
   - (MPC) : Metallüberzogene Zementwiderstände
   - (ML) : Metall-linearer Wider stand
   - (S) : Fester Ausgleichswiderstand
   - (W) : Drahtwiderstand
   - (M) : Metalfilm-Widerstand

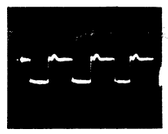


⑧52Vp-p(V)

⑨28Vp-p(V)



⑩1.2Vp-p(H)



⑪120Vp-p(H)

CT-2531EST
CT-2531EST(Y)(I/2)

1. Bezeichnung der Widerstände
   Keine Bezeichnung = Ohm
   K = 1000 Ohm
   M = 1000 K Ohm
2. [illegible]
3. [illegible]
4. Die Symbole für die Widerstände sind wie folgt:
   - (CE) : Zementwiderstände
   - (MB) : Metalloxyd-Widerstände (Type B)
   - (MPC) : Metallüberzogene Zementwiderstände
   - (ML) : Metall-linearer Wider stand
   - (S) : Fester Ausgleichswiderstand
   - (W) : Drahtwiderstand
   - (M) : Metalfilm-Widerstand
5. Die Toleranzbezeichnung ist
   ohne Bezeichnung ±5%, K= ±10%, M= ±20%
6. Die nicht besonders bezeichneten Kundensatoren
   a) µF für Zahlen unter 1
   b) pF für Zahlen über 1
7. Kondensatoren ohne Bezeichnung sind Keramik-Kondensatoren, ausgenommen Elektrolyt-Kondensatoren.
8. Für die Kondensatoren werden folgende Symbole verwendet:
   - (ALM) : Aluminium-Elektrolyt-Kondensatoren
   - (MF) : Polyester-Kondensatoren
   - (PP) : Polypropylene-Schichtkondensator
   - (TANT) : Tantal-Kondensator
   - (TF) : Doppelschichtkondensator
   - (MF-PP) : Polyester-Ploypropylene-Kondensator
   - (MPP) : Metallisierter-Plastikfilm-Kondensator
   - (NP) : Ungepolter-Elektrolyt-Kondensator
   - (PS) : Styrol-Kondensator
   - (SC) : Halb leiterkondensator
   - * : Elektrolyt-Kondensator
9. Die Gleichstrom Spannungsfestigkeit der nicht besonders bezeichneten Kondensatoren beträgt:
   50V
10. Die Toleranz der nicht besonders bezeichneten Kondensatoren beträgt: ±10% für Polyester-Kondensatoren
    ± 5% fur Keramik-Kondensatoren
    Sonstige Toleranzen
    J = ±5% K = ±10% M = ±20% N = ±30%
    P = +100%, –0% Z = +80%, –20%
    C = ±0.25pF D = ±0.5pF F = ±1pF
11. Keramik-Kondensatoren mit den Bezeichnungen RH, UJ, SL usw. sind Temperatur-Kompensations-Kondensatoren.

Schaltungssymbole	
Zener Diode	Varistor
Varicap	Keramikeinheit
Posistor	Luftspalt
Thermistor	Bauteile (Widerstand) auf der Printseite der Platine
Sicherungswiderstand	Keramikfilter

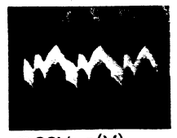
Hinweis 2 :

1. Die Gleichspannungen wurden vom angezeigten Punkt gegen Schaltungsmasse mit einem Hochohm-Voltmeter gemessen.
2. Die Oszillogramme sind bei eingestellten Regenbogen Farbbalkensignal aufgenommen worden.
3. Das ist ein Basisschaltplan. Technische Änderungen zwecks Verbesserung sind vorbehalten.

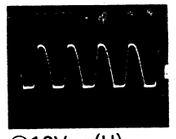
Mainb. 327

SSIS WAVEFORMS

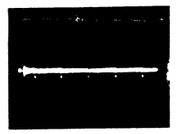
H)



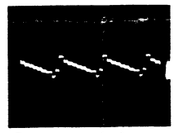
⑥38Vp-p(V)



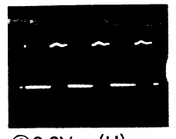
⑦18Vp-p(H)



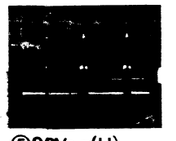
②5.6Vp-p(V)



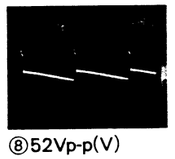
③2.8Vp-p(H)



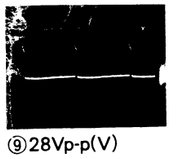
④3.6Vp-p(H)



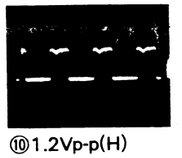
⑤95Vp-p(H)



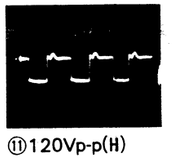
⑧52Vp-p(V)



⑨28Vp-p(V)



⑩1.2Vp-p(H)

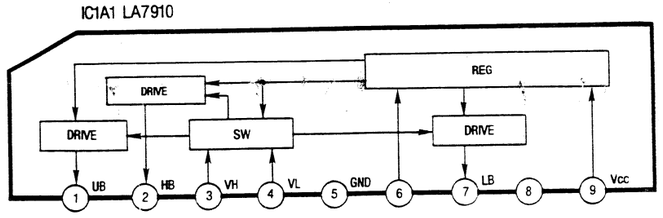


⑪120Vp-p(H)

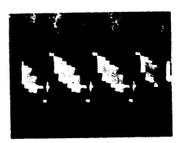
PCB-MAIN ⚠

PCB-POWER-SUB ⚠

IC1A1 LA7910

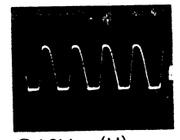


CHASSIS WAVEFORMS

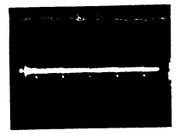


①2Vp-p(H)

⑥38Vp-p(V)



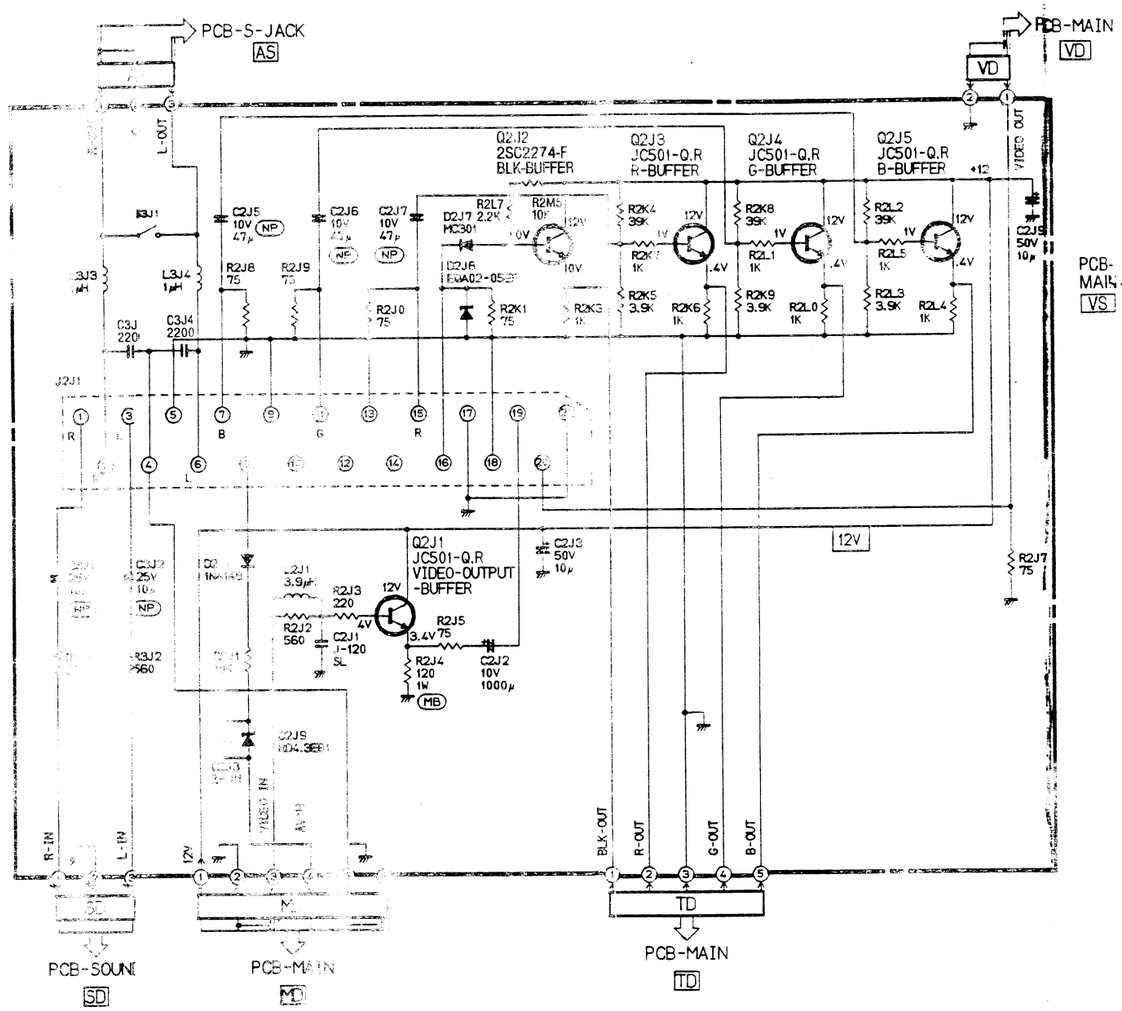
⑦18Vp-p(H)



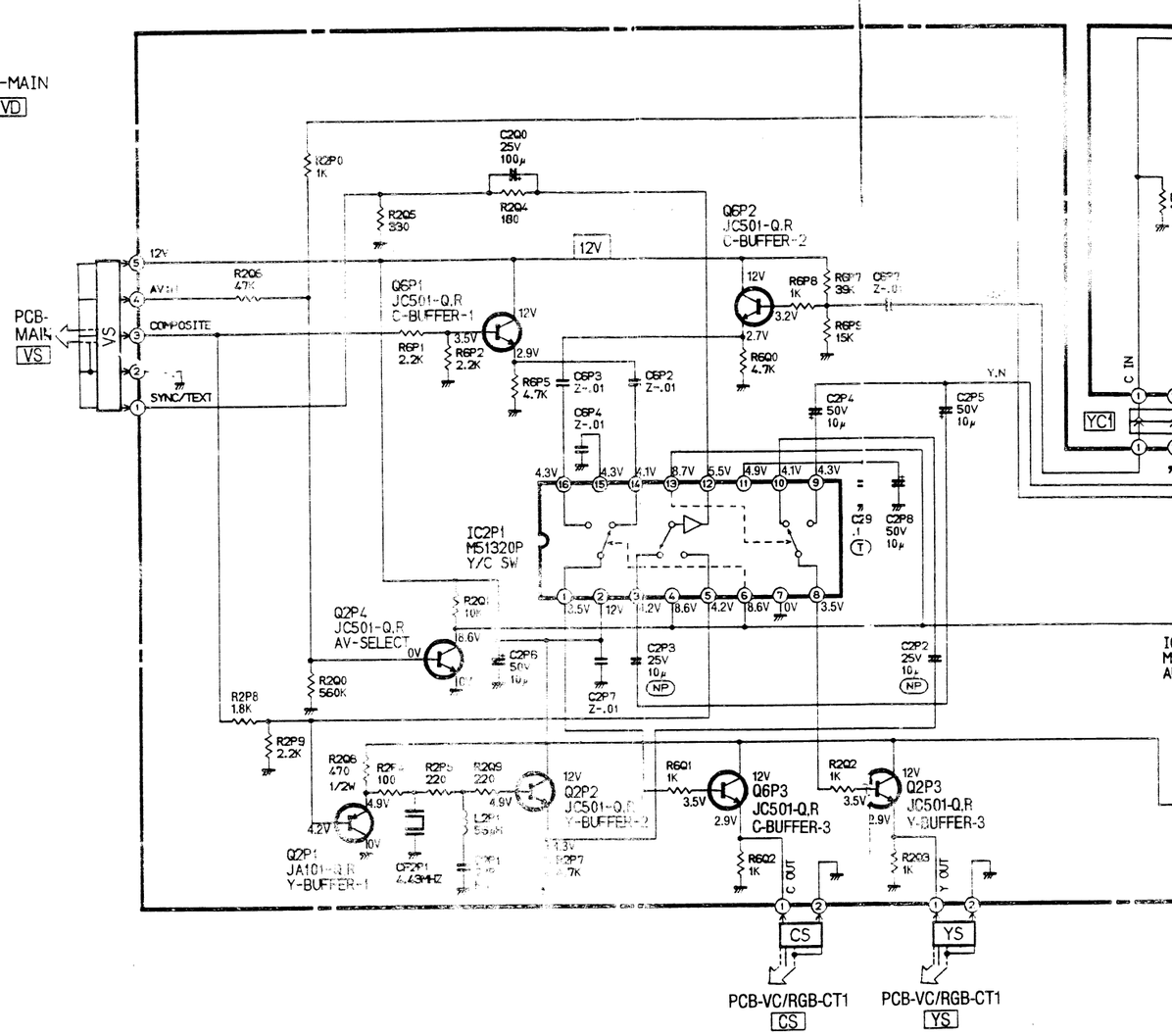
②5.6Vp-p(V)

③2.8Vp-p(H)

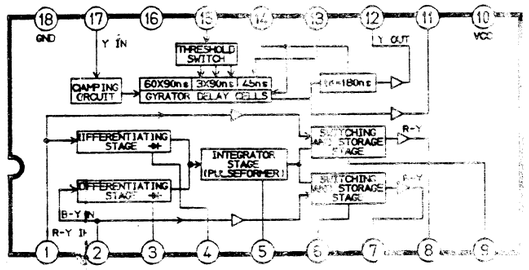
PCB-PERICONNECTOR



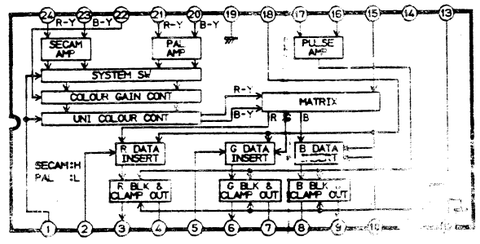
PCB-Y/C-SW



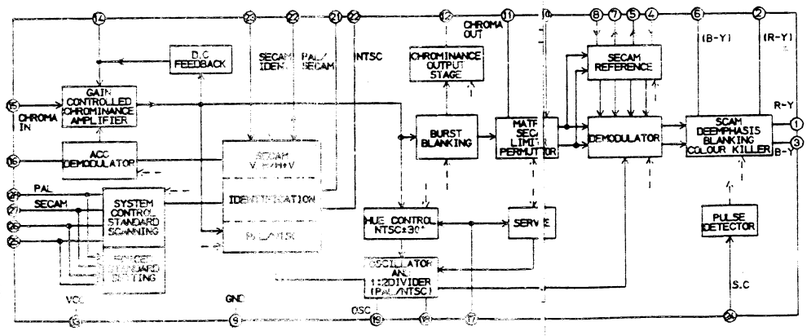
IC602
TDA4565



IC603
LM1576P



IC601
TDA4556



PCB-VC/RGB-CT1

⚠ PCB-Y/C-SW

⚠ PCB-S-JACK

PCB-MAIN
VD

VIDEO OUT

PCB-MAIN
VS

VS

12V
AV SW
COMPOSITE
SYNC/TEXT

R2P0 1K
R2Q5 330
C2Q0 25V 100μ
R2Q4 180
R2Q6 47K

Q6P1 JC501-Q.R C-BUFFER-1
R6P1 2.2K
R6P2 2.2K
C6P3 Z-.01
C6P2 Z-.01
C6P4 Z-.01
R6P5 4.7K

Q6P2 JC501-Q.R C-BUFFER-2
R6P8 1K
R6P7 39K
C6P1
R6P9 15K
R6Q0 4.7K

Y,N

C2P4 50V 10μ
C2P5 50V 10μ

IC2P1 M51320P Y/C SW
4.3V 4.3V 4.1V 8.7V 5.5V 4.9V 4.1V 4.3V
3.5V 12V 8.2V 8.6V 4.2V 8.6V 0V 3.5V
C2P9 50V 10μ
C2P8 50V 10μ

Q2P4 JC501-Q.R AV-SELECT
8.6V 0V
R2Q8 10K
C2P6 50V 10μ
C2P7 Z-.01
C2P3 25V 10μ (NP)
C2P2 25V 10μ (NP)
R2Q0 560K
R2P8 1.8K
R2P9 2.2K

R2Q6 470 1/2W
R2P7 100
R2P5 220
R2Q9 220
4.9V 4.9V
4.2V 0V
Q2P1 JA101-Q.R Y-BUFFER-1
CF2P1 4.43MHZ
L2P1 56μH
R2P1 4.7K
12V Q2P2 JC501-Q.R Y-BUFFER-2
R6Q1 1K
3.5V 2.9V
12V Q6P3 JC501-Q.R C-BUFFER-3
R2Q2 1K
3.5V 2.9V
12V Q2P3 JC501-Q.R Y-BUFFER-3
R6Q2 1K
R2Q3 1K
C OUT
Y OUT
CS
YS
PCB-VC/RGB-CT1
CS
PCB-VC/RGB-CT1
YS

Y/C IN J2P1
L IN J3P1
R/MONO IN J3P2
J2P1
J3P1
J3P2

R6R1 75
D2R1 EQA02-05CD
R2R1 75
R6R2 47K
C3R1 B 2200-K
R6R3 47K
C3R2 B 2200-K
C3R3 25V 10μ (NP)
C3R4 25V 10μ (NP)
R3R3 560
R3R4 560
R3R8 560
R3R7 560
R3R6 47K
R3R5 47K
R
L
AS
PCB PERICONNECTOR
AD

C IN
Y IN
L R R L
YC1
YC2

C3P1 25V 10μ (NP)
C3P2 25V 10μ (NP)
4.3V 4.3V 8.7V 4.9V 4.1V 4.3V
3.5V 12V 0V 8.7V 0V 3.9V
C3P5 50V 10μ
IC3P1 M51320P AUDIO SW
C3P3 50V 10μ
C3P4 B 2200

R OUT
R3P1 100
L OUT
R3P2 100
US
PCBSOUND
AD

IC3A1 LA7953
Thermal Shutdown Over Voltage
Ripple Filter
CH1
CH2
30K
Vcc
IC3A2 LA4270

PCB-PERICONNECTOR
SD
L-OUT
R-OUT
SD

IC601 TDA4556
D.C FEEDBACK
SECAM IDEN.
PAL/SECAM
NTSC
CHROMA OUT
CHROMINANCE OUTPUT STAGE
SECAM REFERENCE
(B-Y)
(R-Y)
CHROMA IN
GAIN CONTROLLED CHROMINANCE AMPLIFIER
BURST BLANKING
MATF SEC LIMIT PERMUTTOR
DEMODULATOR
SECAM DEEMPHASIS BLANKING COLOUR KILLER
ACC DEMODULATOR
SECAM V.PEAKING
IDENTIFICATION
PAL/NTSC
SYSTEM CONTROL STANDARD SCANNING
HUE CONTROL NTSC±30°
SERVICE
OSCILLATOR AN 1:2DIVIDER (PAL/NTSC)
PULSE DETECTOR
S.C
VCC
GND
OSC

PULSE AMP
MATRIX
R B
G DATA INSERT
B DATA
C BLK & CLAMP OUT
B BLK CLAMP OUT

IC3001 TDA3803A
1500Ω
A.F. OUTPUT SELECTOR
CONTROL LOGIC
A DEMODULATOR
CONTROL VOLTAGE SENSE
PILOT AMPLIFIER
IDENTIFICATION
LF DRIVER
SUPPLY
200Ω 200Ω 200Ω 200Ω 4.7KΩ 60KΩ 4.7KΩ
1.2KΩ 1.2KΩ

D255 HZ-3CLL

-JACK

R/MONO IN
J3P2
S2P1
C3R1 2200-K
C3R2 2200-K
C3R4 25V 10μ (NP)
R3R3 560
R3R6 47K
R3R4 560
R3R7 560
R3R5 47K
YC2
C3P2 25V 10μ (NP)
C3P5 50V 10μ
R OUT
R3P1 100
L OUT
R3P2 100
SF
PCB-SOUND
AD
PCB-PERICONNECTOR
AD

IC3A2
LA4270
Thermal Shutdown
Over Voltage
Ripple Filter
CH1
CH2
30K
300
Vcc

IC3A1
LA7953
L CH TONE CONT.
L CH Volume Balance CONT.
R CH Volume Balance CONT.
R CH TONE CONT.
DC CONT.
MUTE
EXPANDER
L CH
R CH
SWITCH-DECODER

IC3001
TDA3803A
A.F. OUTPUT SELECTOR
CONTROL LOGIC
AM DEMODULATOR
CONTROL VOLTAGE SENSE
IF DRIVER
PILOT AMPLIFIER
IDENTIFICATION
SUPPLY
200Ω
4.7KΩ
60KΩ
1.2KΩ

PCB-PERICONNECTOR
SD

PCB-Y/C-SW
SF
AD
R-IN
L-IN
R3B8 47K

PCB-SOUND

PCB-CONTROL SP

IC3A2
LA4270
AUDIO-AMP
L-IN
R-IN
R-OUT
VCC
L-OUT
C3B3 25V 100μ
C3B7 25V 100μ
C3C2 25V 47μ
C3C3 25V 470μ
R3B4 10K
R3B5 1K
Q3A1
JC501-Q,R
MUTE-SW
C3B5 25V 47μ
C3B4 50V 10μ
C3B6 50V 10μ
R3B6 3.3
R3B7 3.3
C3B8 .1 (TF)
C3B0 .1 (TF)
24V
C3B9 25V 1000μ
D3A1 1N4148
R3C7 82K
R3C8 12K
C3B1 .01 (MF)
C3A0 .022 (MF)
C3A2 16V 2200μ
C3A9 .022 (MF)
C3A8 .01 (MF)
R3A8 5.6K
R3B2 5.6K
R3D2 4.7K
R3D3 4.7K
C3A6 1 (MF)
R3C1 2.2K
C3B2 50V 10μ
R3B1 5.6K
R3C2 2.7K
R3C3 2.7K
R3A9 5.6K
C3A7 50V 10μ
R3C0 2.2K
R3B3 4.7K
IC3A1
LA7953
AUDIO-CONTROL
VOL
TRE FILTER
BASS FILTER
L-OUT
VCC
R-OUT
BASS FILTER
TRE FILTER
WIDE FILTER
TRE BLE
Q3A3
JC501-Q,R
VOL-CONT
L-IN
BAL
CONT
L-IN
MUTE
R-IN
WIDE
BASS
R-IN
R3C9 1K
C3A1 50V 10μ
R3D1 1K
R3A0 1K
R3A2 560
C3A3 50V 10μ (NP)
C3A4 50V 10μ
R3A4 1K
R3A5 1K
R3A6 560
R3A7 1K
C3A5 50V 10μ (NP)
R3A3 1K
R3A1 1K

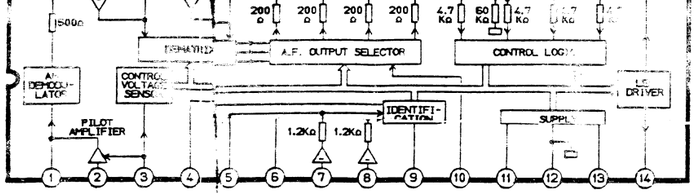
ST
12V
VOL
BLK
TRE
BASS
WIDE
MUTE
AV
BAL
PCB-MAIN
ST

Q3A2
2SC2274-F
RIPPLE FILTER
R3D5 1.5K 1/2W
R3D6 1K
D3A3 EQA02-13A /13EB3
C3D5 50V 10μ
D3A2 1N4148
R3D4 390 1W (MB)
24V

Q3004
JC501-Q,R
BUFFER-2
Q3003
JC501-Q,R
BUFFER-1
R3023 1K
R3022 1K
R3025 3.3K
R3024 3.3K
C3026 J-.047 (MF)
C3023 J-.047 (MF)
R3018 12K
R3017 22K
R3016 12K
R3015 47K
Q3001
JC501-Q,R
MODE-SW
Q3000
JC501-Q,R
MUTE-SW-1

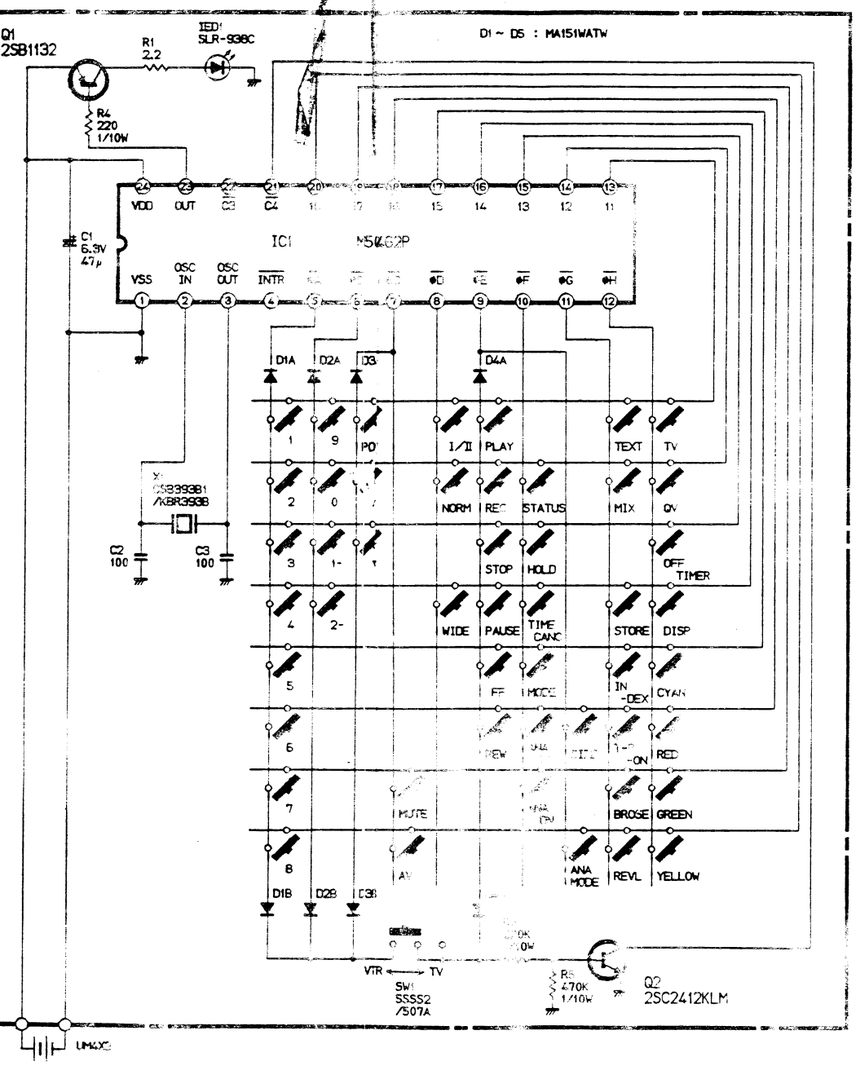
C3028 50V 4.7μ
C3027 50V 4.7μ
R3011 1K
R3010 1K
TP32
TP31
R3014 18K
R3012 18K
LEVEL
TP36
C3029 J-.047 (MF)
R3013 10K
VR3002 20K
L R
ST/MN MUTE I/I
TDA3803A
MULTI-SOUND DECODER & MATRIX
VCC
TP33
TP35
TP34
C3011 J-3300 (STY)
L3003 PILOT
C3012 J-1000 (STY)
C3013 25V
C3015 50V
R3006 220K
R3007 220K
C3020 50V .47μ
C3021 25V 100μ
C3022 25V 100μ

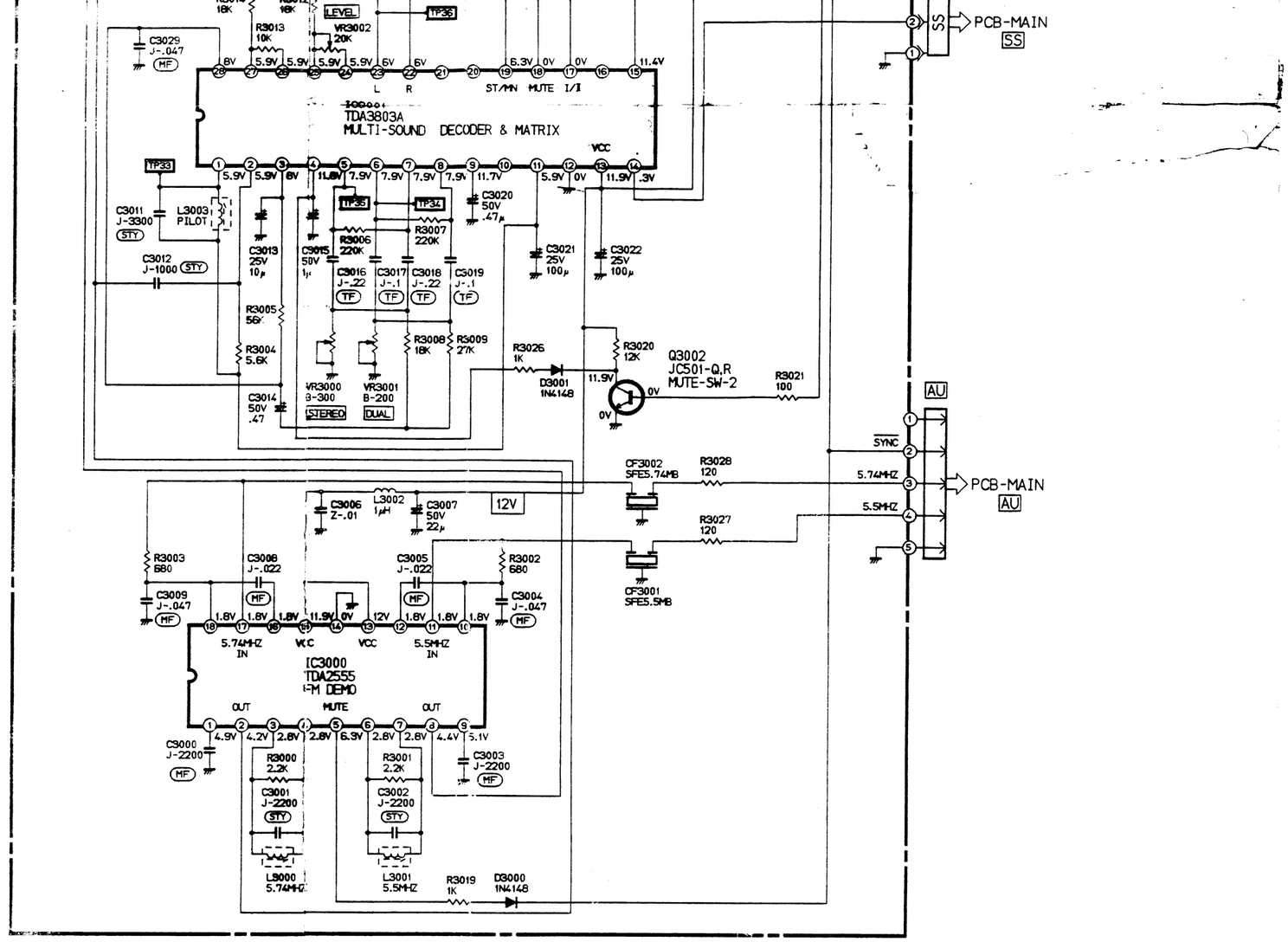
SM
PCB-MAIN
SM
SS
PCB-MAIN
SS

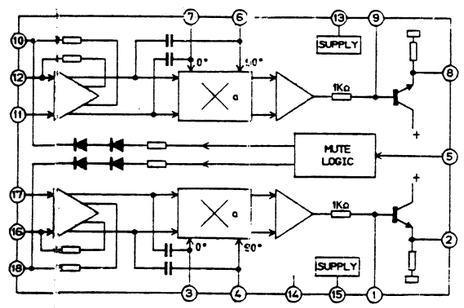


IC3001
TDA3803A

TRANSMITTER-REMOCON

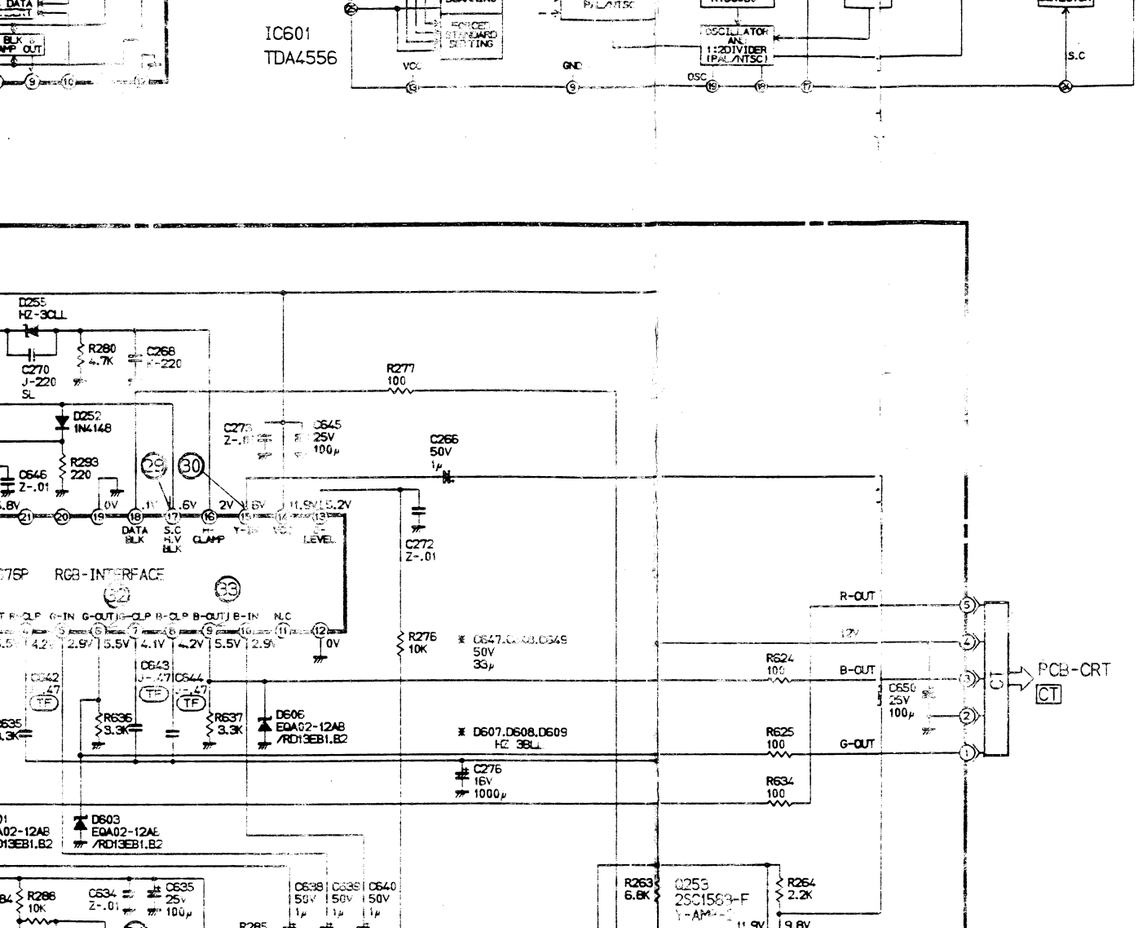




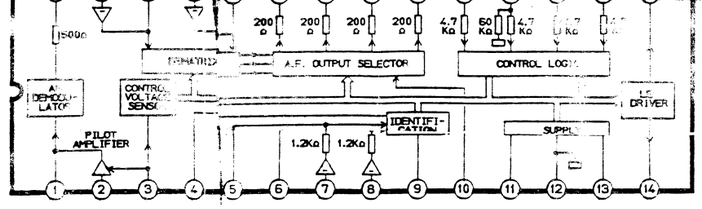


IC3000
TDA2555

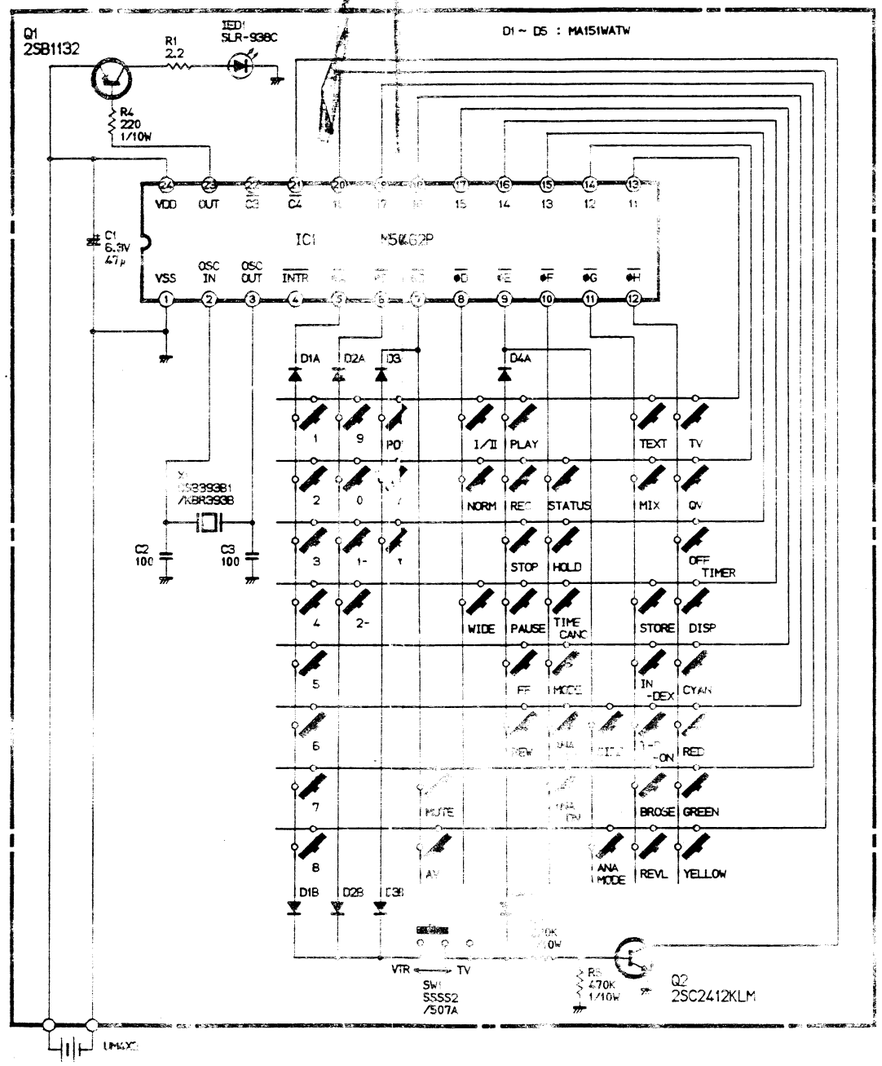
IC601
TDA4556



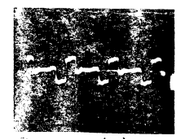
IC3001
TDA3803A



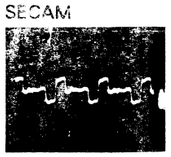
TRANSMITTER-REMOCON



SECAM ⑱1.1Vp-p(H)

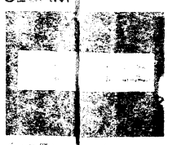


SECAM ⑲1.0Vp-p(H)

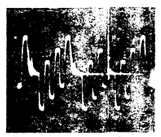


SECAM ⑳2.0Vp-p(H)

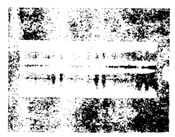
SECAM ㉑15Vp-p(V)



SECAM ㉕1.16Vp-p(H)



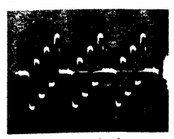
SECAM ㉖Vp-p(V)



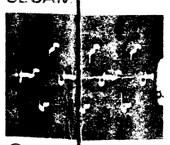
SECAM ㉜2.9Vp-p(H)

SECAM ㉞0.42Vp-p(H)

SECAM ㉟1.6Vp-p(H)

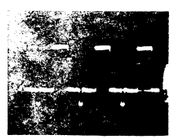


SECAM ㊱20.4Vp-p(H)



SECAM ㊲0.84Vp-p(H)

SECAM ㊳0.84Vp-p(H)



PCB-Y/C/RGB-CTI

IC602 TDA4565

IC603 TA7676P

IC601 TDA4556

PCB-Y/C-SW YS

Q601 JC501-Q,R SECAM-SW

Q602 JC501-Q,R PAL-SW

Q254 JC501-Q,R Y-BUFFER

IC251 NJM2209S SHARPNESS

IC603 TA7675P RGB-INTERFACE

IC602 TDA4565 CTI

12V

PCB-MAIN VC2

PCB-MAIN VC1

CHASSIS WAVEFORMS

⑭1.0Vp-p(H)

⑮1.3Vp-p(H)

⑯0.14Vp-p(H)

⑰0.11Vp-p(V)

⑲1.0Vp-p(H)

㉕1.16Vp-p(H)

㉗2Vp-p(V)

㉘0.82Vp-p(V)

㉚1.9Vp-p(H)

㉛2.9Vp-p(H)

㉜2.9Vp-p(H)

㉝2.9Vp-p(H)

㉞0.42Vp-p(H)

㉟1.6Vp-p(H)

㊱20.4Vp-p(H)

㊲0.84Vp-p(H)